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THE DEVELOPMENT AND TESTING OF AN INSTRUMENT FOR ASSESSMENT AND CLASSIFICATION OF PATIENTS BY TYPES OF CARE

BY

Ⓒ MAVIS E. KYLE

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled The Development and Testing of an Instrument for Assessment and Classification of Patients by Types of Care submitted by Mavis E. Kyle in partial fulfilment of the requirements for the degree of Master of Health Service Administration.

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Date Sept. 23, 1975

ABSTRACT

The study was undertaken to develop and test an instrument for assessment and classification of patients by Types of Care. The project was initiated by the Medicine Hat and District Health Planning Committee as one method of identifying the needs of the community for health care programs and facilities, as well as describing the characteristics of the study population to show the appropriateness of present patient program-placement. The major objective of the investigator was to identify the degree of reliability and validity of data obtained by use of the instrument.

Using the Types of Care classification and related patient characteristics as defined in the Report of the Working Party on Patient Care Classification as the criterion measure, an assessment and classification instrument and User's Manual were developed. Assessment items were related to the demographic characteristics, medical status, and physical and psycho-social functioning of each patient. Classification items included the Type of Care, the site where needs could best be met, and program requirements.

Following a pilot test and pretest, a clinical analytical survey was carried out on a specific day on the study population of 490 patients in an acute care hospital, auxiliary hospital, two nursing homes and individuals awaiting placement in the long-term care facilities. The assessors were registered nurses in the institutions and in the community, providing care to the patients. Additional input from other health care professionals, the

patient and his family was encouraged.

A stratified random sample of 100 patients was used for an inter-rater reliability study and another sample of 100 patients was randomly chosen for an empirical validity study. Statistical procedures were undertaken to identify the degree of reliability and validity of the instrument items and to produce descriptive frequency distributions.

An acceptable degree of item reliability was identified in the inter-rater study, as indicated by a median of 91.3% agreement between the two assessors over all items. Acceptable face validity was indicated by feedback from the users, and content validity was established by content analysis. Construct validity was examined by two factor analyses, one on the assessment variables, and another on the classification items. The major assessment factor was a physical dependency construct. Both of these factor analyses identified a factor related to acute psychiatric needs in addition to other factors related to Types of Care, as defined. Concurrent validity was established by examination of the extent of relationship between each item and Types of Care. Stepwise discriminant analysis and Bayesian classification indicated adequate discriminability between Types of Care, the Wilks' Lambda being .048 at the last step. Agreement between the Medicine Hat assessors and the Bayesian classification was 89% overall. A scatter diagram of the means of each Type of Care, plotted on the first two canonical variates, showed a curvilinear relationship, with the Types in order along the curve. The empirical validity study showed overall agreement between the expert and the Medicine Hat assessors to be 79.7%; however, difficulty was encountered with identifying Type 4 patients.

It was concluded that the instrument possessed an acceptable degree of reliability and validity. The major recommendation is that additional research be undertaken to determine predictive validity and further refine the instrument and User's Manual. Other recommendations relate to the experimental use of information gained by studies of this kind for planning, administrative and patient care decision making.

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CHAPTER I

INTRODUCTION

A major need of many government officials, health care planners, and professionals involved in patient care is the development of "an information system which will enhance relevant surveillance of a population under care and is capable of mapping data about patient condition and appropriate care programs to aid in decision making processes in patient transfer or alteration in the care program" (Flagle, 1969, p. 721).

The desideratum is difficult to attain, because often the characteristics of disability or severity of illness are elusive, which makes direct measurement impossible. Therefore, indirect measurement of physical and behavioral manifestations and outcomes are utilized. The more subjective these measurements become, the more difficulty arises in demonstrating validity, reliability, sensitivity and specificity of interpretations (Akpom, Katz & Densen, 1973).

One such information system is multidisciplinary assessment and classification of a population. The input from a number of professionals and non-professionals, as well as the patient himself, provides an integrated approach to decision making based on comprehensive knowledge of the patient as a whole. The group involvement increases the probability of optimum decisions to meet the individual's requirements. The users of assessment and classification systems differ in disciplinary orientation, values and purposes. For example, epidemiologists may wish to utilize such information to explain the origin of a group, or to predict changes in the group with the passage of time. Health practitioners and health administrators may wish to evaluate the effect of care on patients, place patients into appropriate facilities, monitor ongoing processes of care and allocate resources within programs, while community health planners may wish to use data from classification processes for decisions related to resource control and planning on a community level. Government planners may use the information to assist in program planning and in allocation of resources in the provincial or federal sphere. It becomes obvious, then, that any classification system will need to provide a core of information which can be processed and analyzed systematically, and be augmented by other sources of information on which the user can make decisions based on professional judgement for the purpose he has in mind (Jones, 1973).

PURPOSE OF THE STUDY

This study constitutes a beginning attempt to develop and validate an instrument to classify patients into the five Types of Care, as described in The (1973) Report of the Working Party on Patient Care Classification to the Advisory Committee on Hospital Insurance and Diagnostic Services, hereafter referred to as the Federal W.P.R.

The classification is based on information gained by conducting a clinical analytical survey to assess patients' demographic characteristics, medical status, physical and psycho-social functioning, as well as requirements for treatment and therapy. The study population is then classified into the appropriate Types of Care, sites where their needs can best be met, and the community programs required for those in a non-institutional site. The emphasis of this study is (1) to develop an instrument and test it in one community in order to identify the degree of reliability and validity of the instrument and (2) to study the characteristics of the population under investigation.

NEED FOR THE STUDY

The need to develop an instrument to systematically assess the demographic characteristics, medical status, physical and psycho-social functioning of patients is well documented in several recent reports (Bayne, 1972; Burack, 1965; Dressler, 1971; Fox, 1974; Jones, 1973; Morgan, 1974; Nauen, 1968).

More specifically, patient assessment and classification, an information system used to assist in making decisions, could ideally be applied in any setting and at all stages in the process of patient care. This was recognized in the Federal W.P.R., which stated:

> ...Attention must be focused, with increasing urgency on the development of consistent and compatible methods of identifying and measuring health care needs within a population so that the necessary and appropriate care can be delivered in the most suitable setting (p. I).

At the provincial level, the Alberta Hospital Services Commission has recently completed a Commission Task Force Report -- Nursing Homes in Alberta, (1974). One of the major recommendations relates to the need for a method of patient classification to assist with the initial placement and ongoing evaluation which, in turn, should lead to movement in the system as the patient's need for care changes over time.

In a study relating to the psycho-geriatric patients in Alberta's long-term care facilities, the findings of this author pointed to the need for a classification system with strong emphasis on psycho-social functioning and related care requirements (Kyle, 1974).

American literature also stresses the need for research in the area of patient classification. Although the emphasis on cost is more pronounced, due to U.S. Medicare and Medicaid legislation and associated payment mechanisms, the underlying emphasis is on providing services and programs which will not under service, nor over service, their population. Thus, methods of classification are under study (Dressler, 1971; Fox, 1974; Jones, 1973).

It is clear that research must be undertaken to develop a system of assessment and classification of population members which will provide reliable and valid data for various purposes. Only through knowledge of population requirements can rational decisions be made which will foster the most efficient and effective delivery of health care.

DESCRIPTION OF THE STUDY

In June, 1974, the Medicine Hat Health Care Planner, on behalf of the Regional Planning Committee, requested assistance from the Alberta Hospital Services Commission (AHSC), which is the provincial hospital authority, in defining the need for institutions and programs to meet the health care needs of the citizens of that community. As a graduate student doing a residency with AHSC, this author was given the task of developing an instrument which would identify the demographic characteristics and medical status, as well as the physical and psycho-social functioning of patients, and classify them, in order to identify the required sites and programs to meet the manifest needs. This appeared to be a unique opportunity to develop a classification system upon criteria set out in the Federal W.P.R. As stated in that report:

> The kinds of classifications described in the report have been developed as guidelines which, it is hoped, will provide provinces and health care organizations with a base upon which to build classification systems and at the same time, encourage further research and development. It is recognized that implementation can only proceed in accordance with local, provincial, and national needs (p. I).

The study is aimed at the development and testing of an instrument through use of a pretest and a clinical analytical survey to (1) assess and classify patients into the five Types of Care, as defined in the Federal W.P.R. (2) identify the most appropriate sites and programs required to meet their needs, and (3) describe the characteristics of the patient population. The major thrust is in relation to the reliability and validity testing of the data gathered by use of the instrument.

The study population included 490 patients in one general hospital, one auxiliary hospital, and two nursing homes and also included individuals currently located in the Senior Citizens Lodge, their own home or in the acute or auxiliary hospital who were awaiting placement in long-term care settings.

The "snap-shot" approach was utilized, that is to say, on a specific day, all those in the health care system or awaiting placement were assessed and classified.

Nurses who were caring for the patients acted as assessors and classifiers. This approach included nurses in the institutions as well as the community nurse who was caring for individuals in the lodge or in their home. For purposes of the inter-rater study, two nurses familiar with the patients' characteristics carried out independent assessments and classification. The District Health Care Planner acted as coordinator of the project, with assistance from a registered nurse who was the District Assessment and Placement Officer for long-term care.

The purpose and methodology of the study were discussed with Board members, administrative staff of the institutions involved, and with health care professionals, in order to promote understanding of the objectives and possible outcomes of the study. Orientation meetings for the nurse assessors were undertaken by the investigator, to promote a clear understanding of all components of the instrument.

Following development of the instrument, orientation of the assessors, and a pretest and test, data analysis was undertaken. The methodology and analysis of data will be elaborated upon in Chapters III and IV.

Feedback of results of the study was provided to Medicine Hat participants by an interim report and a final report (Kyle, 1975), to supply information to assist with planning, administrative and patient care decisions.

DEFINITIONS

General consensus regarding the central terms used is an essential requirement in any research project. The following definitions have been developed from a review of the literature pertinent to the subject.

PATIENT CLASSIFICATION

Classification, according to Webster's New World Dictionary (1970) is "arrangement according to some systematic division into classes or groups".

> In the context of health services delivery, the word classification is conceptually different depending on where it is used and for what purposes, although the objective of arranging and assigning clients to categories remains the same. Different categorizations are required for different purposes to cover the entire spectrum of health and related social needs (Federal W.P.R., p. 7).

TYPES OF CARE CLASSIFICATION

The Types of Care classification system deals with manifest needs of patients with defined morbidity who require direct action and types or kinds of care appropriate to their needs. The classification is a means of matching the individual with the appropriate program and service. The five Types of Care are identified with the numerical progression reflecting the increasing qualifications, numbers and variety of staff, increased costs, and increased complexity of services needed. The characteristics of the patient condition should determine the Type of Care required and are expressed in terms of patient needs.

PATIENT ASSESSMENT

Patient assessment is the determination of demographic characteristics and an estimation of the degree of dependence related to medical, physical and psycho-social variables chosen to identify the manifest needs of a patient. The focus is on the patient and his needs. The ultimate purpose of patient assessment in this study is classification of the patient into a group for one or more purposes, including program placement.

LEVELS OF CARE

Levels of Care ideally encompasses medical, nursing, social and psychological needs of patients which measure in quantitative terms the frequency and intensity of care required. The number of categories is kept to a practical limit, i.e., three or four specific groupings ranging from minimal to intense care. Current applications are related to nursing care requirements in acute care settings which measure the volume and complexity of care required by the patient,in order to match nursing resources with patient requirements (Federal W.P.R., p. 56).

VARIABLE

A variable is a measurable or potentially measurable component of a subject that may fluctuate in quantity or quality, or that may be different in quantity or quality from one individual subject to another individual subject of the same general class.

RELIABILITY

Reliability may be defined in terms of its analogy to such words as consistency, stability and reproducability. One example is, if at least two sets of data are collected under the same circumstances using the same subjects and through statistical analysis they are found to be highly or perfectly correlated, the instrument is considered to be reliable.

VALIDITY

Validity refers to the extent that an instrument measures what it seeks or purports to measure. This is the definition in common use, however, six different types of validity, i.e., face, content, construct, concurrent, empirical and predictive, are defined in the section on Validity in Chapter III.

CRITERION MEASURE

Criterion measure is a standard, rule or test by which something can be judged to provide a measure of value.

CLINICAL ANALYTICAL SURVEY

A clinical analytical survey may be defined as a detailed study by gathering information in a clinical setting through determination of patient attributes, recording information on a prepared instrument, and analyzing the data by means of appropriate statistical tools to infer certain meanings which lie hidden within the data.

OUTLINE OF THE PRESENTATION

The presentation is divided into four main sections: Chapter II contains a review of pertinent literature on patient care assessment and classification; Chapter III provides a detailed outline of the methodology used for the clinical analytical survey and the data analysis, while Chapter IV contains the presentation and analysis of the data. Chapter V presents a summary of this study, along with limitations, conclusions and recommendations. The Appendices include the instrument used for the pretest, the revised instrument used for the test, the User's Manual and the coding system used for data analysis.

The reader's attention is now directed to a review of the literature on systems of patient assessment and classification.

CHAPTER II

A SELECTIVE REVIEW OF THE LITERATURE

The intent underlying this literature review is that of providing an overview of trends in the system of health care delivery regarding: (1) kinds of patient care classification systems, (2) government involvement in assessment and classification projects, and (3) components of the multidisciplinary approach to assessment and classification.

Discussion of literature related specifically to reliability, validity and methods of statistical analysis is incorporated in Chapter III.

FRAMEWORK

Patient Care Classification is an outgrowth of the concept of Progressive Patient Care and increasing interest in health care planning which has developed over the past two decades. Flagle (1969) approaches health service as an ecological system in which a complete range of services and facilities is provided to meet the health needs of the individual, with rational and sensitive means of co-ordinating and timing the application of these services. As well, the system must have a variety of services to meet the needs of the whole population, with administrative mechanisms capable of forecasting health needs and planning and acting to meet them.

Health service as a system, unfortunately, has been approached segmentally through its elements, without overall acceptance and application of the system concept. Public and governmental concern over spiralling cost and inadequate alternatives to institutional care has made it imperative that experimentation, innovation and new approaches be undertaken to create a goal setting and goal seeking approach to an organized, co-ordinated, planned system.

In an effort to provide a framework for comprehensive analysis, Flagle has developed a model of the Health Care System. Figure 2.1 represents the flow of the population through various elements of the health care system.

> The model is both deterministic and stochastic, the deterministic process of aging noted by arrows climbing the steps of the population pyramid, the stochastic processes noted by arrows flowing from the population into and between health services in response to accident or illness (p. 717).

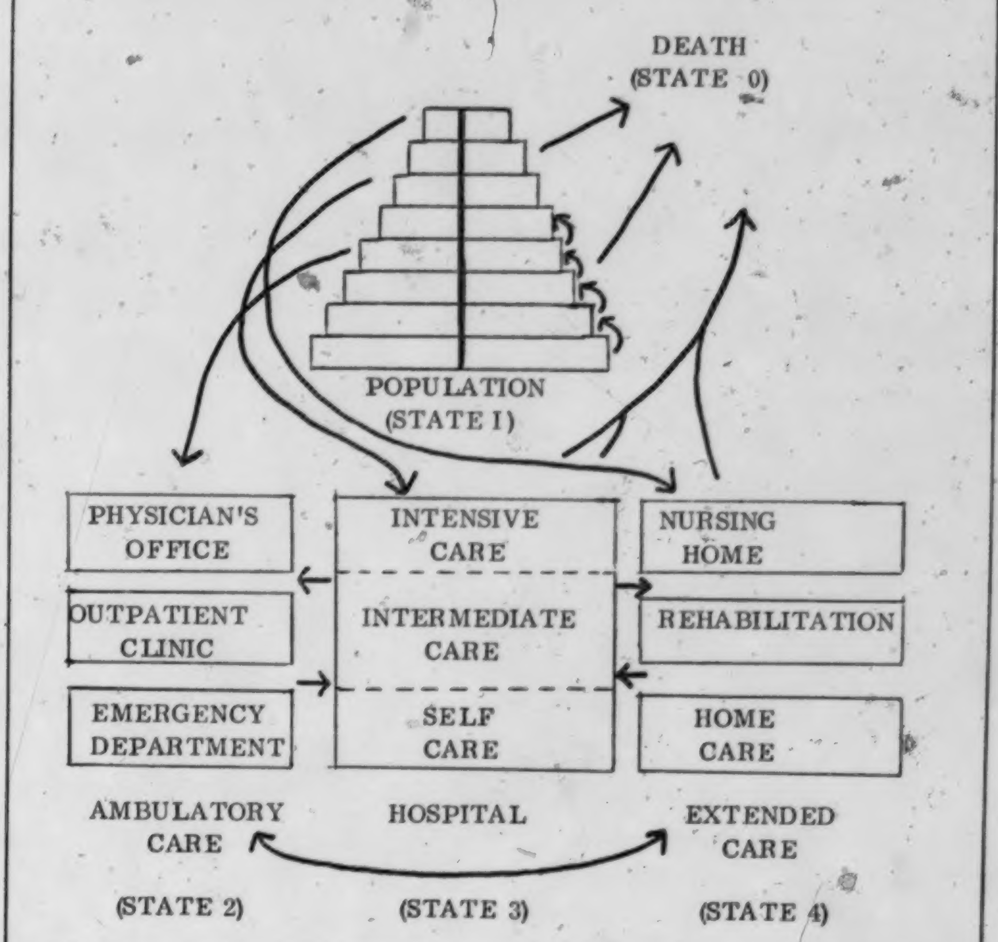

FIGURE 2.1

MODEL OF PATIENT FLOW INTO AND THROUGH HEALTH SERVICE FACILITIES
(Flagle, 1969, p. 718)

The flow of patients may be in any direction, from the population pyramid to any of the care settings, to another care setting or ultimately leaving the system. Three stages identified are the input or admission stage, the throughput or treatment stage, and output or discharge stage. As discussed by Ryder (1971), Flagle's model can be further divided into seven procedures grouped within the three stages. STAGE 1, initial screening or triage and admission, includes two procedures: (1) identification of the total care needs of the patient, and (2) identification of the appropriate environment and services which maximize the probability of success in satisfying the patient's care needs. STAGE 2, the patient care progress in the setting, includes the following procedures: (1) goal setting for the individual patient, (2) providing the most appropriate available resources, (3) monitoring change in patient status and taking appropriate action, and (4) ongoing evaluation of patient progress related to the original goals and revision of the care plan if required. STAGE 3, the discharge component, includes discharge from the system or transfer from one setting to another, based on evaluation of requirements for care.

Patient assessment may be undertaken during any or all of the preceeding procedures. The assessment is a basis on which to make decisions regarding placement and service requirements. Based on the assessment, the patient can be classified into specific groups for multiple purposes. Ryder notes the current emphasis on the how and who of patient assessment. A great deal of the literature refers to the goal of placing the patient in the right place at the right time at the right cost, and whereas the decision making should be based on this desideratum, it is clear from studies in the field that there remains a fragmented system.

Early differentiation of patients' needs has been undertaken in the acute hospital setting (Connors, 1961; Sjoberg, 1968). Levels of patient needs, e.g., intensive, intermediate and self care, were the basis on which requirements for nursing staff and services were determined.

Additional components of the Flagle model were developed under the Progressive Patient Care concept (Griffith, Weeks & Sullivan, 1967) which incorporated ambulatory care, home care and extended care.

Concurrent with these developments has been the emphasis on regional planning and, therefore, the requirement for knowledge of the demographic and morbidity characteristics of the population (Preston, White, Strachan & Wells, 1964; Wenkert, Hill & Berg, 1969). Awareness of population needs was utilized in planning the distribution of scarce health care resources, including decisions regarding the development of community programs.

Most of the literature reviewed by this author concentrates on only one component of the system, such as long-term care, or psychiatric care, or rehabilitation without identifying the health care needs of the total population.

SOME APPROACHES TO PATIENT CLASSIFICATION

In order to develop health care programs we must have knowledge of the health status of members of the population. This status includes the ability of the whole person to function physically, psychologically, socially and economically. It is essential that methods are developed to assess health status and identify changes in status in order to plan and implement services to work toward a beneficial outcome for population members (Akpom, Katz and Denson, 1973).

Classification by disease category, classification by risk factors, classification by categories of function and classification by health indicies are the major approaches currently in use.

Categorical disease classification such as The International Classification of Diseases, Adapted (ICDA), provides a method of grouping like diseases for reporting purposes and epidemiological surveillance. It is also suitable for indexing hospital record systems and assists with the process of coding, posting and location of records. Its limitations are that the present nomenclature of disease is a poor indicator of the different patterns of disease manifestation, and therefore the severity of illness and disability. This system, then, has a limited role in defining comparable groups of people, and identifying changes in the course of an illness, especially chronic illness (Akpom, 1973). The care needs related to the identified disease process are not identified under this system of classification.

Classification of persons according to the presence of risk factors is a method of identifying those indicators of specific diseases through multiphasic screening, self administered questionnaires, and/or interview surveys. This provides comparable information on the status of the population in relation to a specific illness, e.g., heart disease. Risk factors may include abnormal blood pressure, blood cholesterol and blood sugar levels, as well as a history of chest pain and cough. Again, major limitations have been identified with this system because of current incomplete knowledge of the critical factors of disease and the inability of the method to identify the related care requirements. As noted by Katz, Ford, Downs and Adams (1969) in relation to chronic disease classification:-

> Components of screening schedules are selected on the basis of their validity as indicators of disease. Since the currently available knowledge about causes and processes of chronic disease is incomplete, indicators are not selected with confidence. Selection of criteria tends to be somewhat arbitrary, and no known screening schedule covers the whole range of chronic diseases. Criteria are included to cover those diseases that are most prevalent, and knowledge about the sensitivity and specificity of component criteria is inadequate. As a result, the problem of false positives and false negatives often confuses the interpretation of screening studies (p.139).

The characteristics of ill patients according to their level of functioning have received a great deal of attention in the literature. Gersten, Cenkovich, Dinken and Miller (1966) report on a study carried out in Colorado to assess the functional ability and outcomes of rehabilitation patients in the home setting versus those being treated in a clinic. Gurel, Linn and Linn (1972) developed and tested a system based on the idea of "Physical and Mental Impairment of Function Evaluation (PAMIE)" for the quantitative description of a wide range of behaviors relevent to the adult chronically ill, generally, and to institutionalized geriatric patients, specifically. This approach is closely related to that underlying the Stockton Geriatric Rating Scale (Meer & Baker, 1966) which identifies the day-to-day behavior of geriatric patients in a hospital setting with the objective of determining behavior appropriate for discharge from the institution. Katz's Index of ADL (1970) groups patients according to their levels of dependence in the performance of primary activities of daily living. In this system, patients can be ranked in seven grades of increasing disability according to their level of function in bathing, dressing, going to the toilet, transferring, continence and feeding.

The advantage of classification of ill persons by assessing levels of function is that relatively objective measures can be obtained and that the classifications are sensitive to changes in morbidity. As well, an indication of care requirements can be obtained from knowledge of functional deficits. For populations that have more than one disease entity, the advantage is that homogeneous groups can be identified. This system of classification is multi purpose. As reported by Akpom, it has been successfully used to classify chronically ill people for purposes of rehabilitation, to evaluate home care, in population surveys and in longitudinal studies of patients with specific chronic conditions.

Limitations of the functional level system of classification are its ineffective use in studies related to prevention of onset or development of disease, and its inability to detect minor changes in function. Possibly the major limitation, identified in American as well as Canadian literature, is the multitude of systems based on levels of functioning. Few have gained widespread use and there is no standardization of terminology.

Another major approach to classification is the Index of Health Status which is an attempt to define health in operational terms. Three major objectives of health status indices are discussed by Lerner (1973). Firstly, an index should evaluate the effectiveness of the present health care delivery systems and programs, with special emphasis on those in an experimental phase and those financed with public funds. Secondly, the objective for construction of an index of health status is to evaluate the quality of health services provided by medical practitioners and, thirdly, a scientific objective is to discover the "true" nature of social reality independent of practical application.

Problems inherent in the endeavor to define health in operational terms are related to the multi dimensional or qualitative aspects of health, with many facets which must be inferred. The components or indicators must be identified and weights assigned so that an overall index may be developed. Another problem identified by Lerner is that, when the aggregate of the population whose health is being measured encompasses a community, the health of the community may be more than the aggregate of the health status of individuals who make up that community. "The logic of this is that some significant proportion of the well-being of any individual is intimately associated with the health of his community qua community -

the community considered as an entity - because men are social animals and achieve their distinctive humanity, well-being, and health only as members of their community" (Lerner, 1973, p.1). Goldsmith (1972) sees limitations related to the difficulties in conceptualizing what is being measured, as well as difficulties in making value judgements which are valid.

Burack (1965) identified these major types of classification and underlined the need for a broad interrelated classification system which would blend the knowledge of specialized disciplines responsible for the care and management of the geriatric patient. He saw the importance of integrating thoughts, ideas, and goals of medical and para-medical groups into broad general categories which would be meaningful to the individual groups and provide interchange of information for the benefit of the patients' care program. His research group developed a comprehensive classification for the aged which classified the individual medically, functionally, therapeutically and projected the goals to be achieved (p. 1059).

Similar work has been undertaken in Munroe County, New York, where studies were undertaken to identify the extent of need for all levels of health care and the appropriateness of care being received (Williams, Hill, Fairbank & Knox, 1973). Of particular note is their work related to health care in the aged population which utilizes a systematic classification of levels of health care based on both physical and mental assessment, which established a method of judging what level of care an individual required as of the day of the assessment. An internist and a public health nurse reviewed the data and additional assistance was obtained from a psychiatrist or social worker as needed. Results of the study provided estimates for the number of beds and services required for each level of care for defined populations and also identified the large extent of inappropriateness of placement of many persons in the various levels of care. Through correspondence with Knox, this investigator obtained unpublished material titled "Criteria and Guidelines for Evaluation of Aged or Chronically Ill Persons for Maintenance at Home or for Placement in an Appropriate Long-Term Care Institution." Although the emphasis is on long-term care, the ten levels of care identified also reflect acute physical and psychiatric needs, as well as the health and/or support services required and the alternate settings for each level. Their "levels" of care correspond to a degree with the Federal W.P.R. "Types" of care. The work of this research group appears to be the most comprehensive identified in the review of pertinent American literature and correspondence with experts in the field of health care evaluation.

The social, psychological and physical dimensions of functional assessment was the scope with a multi disciplinary approach in studies conducted in Texas by Gaitz and Baer (1970). The focus was on performance as well as the underlying factors to which variations in function may be attributed.

The emphasis in the majority of studies reported is on the assessment component of the classification, without a generalizable classification component that would place the client in a specific group. This may point to the fragmentation of the system where the objective in most cases is the appropriate placement of a specific group of patients into institutional sites or ambulatory and/or home care programs. This point was emphasized by Densen at Harvard University in personal conversation, when he referred to "the state of the art" being at the developmental phase, with need for extensive use of their classification system to provide information as to the effect on the patient population and groups in a wide range of care systems.

GOVERNMENT INVOLVEMENT IN PATIENT CARE CLASSIFICATION

CANADIAN-FEDERAL

On the Canadian Federal scene, a Working Party on Patient Care Classification was appointed in early 1972 on the recommendation of the Advisory Committee on Hospital Insurance and Diagnostic Services. Their report was published in November, 1973. The terms of reference were: -

1. To develop national uniform criteria for classifying all levels of patient care and to relate these to the types of institutions, facilities or organizations where these levels will be provided.
2. To consider the implications of a system of classification to the provincial hospital insurance plans (Federal W.P.R., p. IV).

The Working Party recognized the need to classify all levels of patient care, which would include classifying the health and social needs of the total Canadian population. The consensus was that hospitals and institutions are overutilized because many individuals are unable or unwilling to recognize the need for early ambulatory care, and because institutions are utilized when needs could be met by other modes of health care delivery. This overutilization may be based on financial policy, that is, when care is insured in the institutional setting, and not insured in the home environment, individuals will tend to seek the insured programs. As well, the slow development of community-based programs sometimes negates the option of alternate modes of delivery of care. Another factor may be barriers to movement of patients in the system, brought about by lack of beds in the appropriate facility, inability of the spouse or family to care for the individual and/or rejection of appropriate placement for a variety of reasons. Therefore, the classification of needs must be considered at an early stage for the ambulatory person, as well as for those in institutions, to provide for appropriate program placement and identify the need for development of alternative modes of program delivery.

Rather than basing the Federal W.P.R. recommendations on professional or institutional specifications, the emphasis was seen to be on clients' or patients' needs. Three systems of classification were developed to provide "early identification of needs as well as categorizing manifest needs in terms of the type and amount of care required" (p. 6). This procedure would enable resource allocation to be based on the need for health services, rather than demand. As stated in the Report:-

> In general health planning, relevant information about health and social needs of individuals is required so that preventive, curative or restorative services appropriate to needs can be provided at a time when they will have a premium benefit. With a simple and accurate system of identifying individual needs at hand, services can be mobilized to meet manifest needs. Classifying in terms of numbers, types and degrees of care would avail planners with information to organize services on the basis of need rather than current demand (p. 6).

Three universes are covered by the classification systems identified in the Report. The first system relates to the entire population and provides a method of grouping general health needs into well defined categories. The second system relates to clients or patients with manifest needs for types or kinds of health and social programs. The third classification relates to patients within care settings who require different levels or gradations of care, based on the perceived need. It is underlined in the Report that a fundamental principle is that categories will reflect specific needs and that the needs can be grouped so that services can be provided in the most efficient and effective manner.

The classification systems defined in the Federal W.P.R. are the most comprehensive identified in the investigator's search of the literature. Although the goal is to cover the total spectrum of health and social needs of the population, one limitation appears to be that the Report has not made specific reference to the patient requiring psychiatric care. This may have been intentional, due to the increasing emphasis on the policy of integration of the patient with need for acute psychiatric services into the general acute care stream, and the integration of patients requiring chronic psychiatric care into the long-term care stream; nevertheless, this must be an area for future study and development of the system of classification.

Because the investigator uses the second system of classification, that is, Types of Care and related patient characteristics, as the criterion measure for this study, a more in depth discussion of this component of that system will be undertaken in Chapters III and IV.

CANADIAN-PROVINCIAL

Most Canadian provinces have utilized methods for assessment for placing clients in long-term care facilities. In the majority of cases, their assessment systems exclude patients requiring acute care and those persons who can have their needs met in the home environment.

Based on correspondence with government officials in selected provinces, the following information has been received:-

Ontario: The Government of Ontario is in the process of developing an assessment tool based on the "Types of Care" criteria. Dr. R.S. Peat, Senior Medical Consultant in the Ontario Ministry of Health, reported that assessment is done utilizing a team approach, with the discharge planning nurses acting as co-ordinators. The nurses assimilate all the judgements of the disciplines to provide a comprehensive view of the physical, mental, emotional and psychological needs as well as the home and family relationships which affect placement.

Nova Scotia: A draft proposal based on "Types of Care" classification has been suggested for use among all health related agencies. It is similar in all respects to the Federal W.P.R.

Saskatchewan: A joint planning committee of the Departments of Health and Welfare, developed Criteria for Levels of Care for the Province of Saskatchewan, 1969. They identified five levels of care, not including acute care, based on patients' physical, mental and emotional state, the care required, and the staffing component to meet patients' needs. "Levels", as defined in Saskatchewan, compare to "Types" in the Federal W.P.R., that is, they identify program-placement based on patient needs. However, the patient characteristics within the levels differ from the Types.

British Columbia: Classification of Types of Health Care in British Columbia, Department of Health, 1973, provides for five types of health care with a description of the patients' needs, characteristics, programs and appropriate locations. The process of eligibility and follow-up assessment of patients in extended care was under revision at the time of correspondence.

Newfoundland: Government officials have produced a document, A Description of Services, Types of Facilities and Nursing Staff for Varying Levels of Health Care (1972). Seven levels of care are outlined, ranging from acute to social care for the aged. To the time of correspondence, no organized method of patient assessment had emerged.

Alberta: Throughout the Alberta system, admission procedures to long-term care facilities are commenced when a physician documents the patient's condition on a "290 Form" which is then evaluated by a multidisciplinary Admissions Committee. Placement is determined following their recommendation. In three centres, district placement officers for extended care, who are registered nurses, coordinate the placement activities.

Since 1973, the Alberta Hospital Association has conducted a twice yearly Provincial Patient Census, utilizing the patient characteristics and typology from the Federal W.P.R. All patients in the province's hospitals and nursing homes are classified by medical and nursing staff. Findings show a significant percentage of patients receiving care in other than the appropriate site (Flathman, 1973).

A research project on Patient Classification by Types of Care, under the auspices of the University of Alberta and the Alberta Hospital Services Commission, is currently being developed for grant approval by Health and Welfare Canada, Research Programs Directorate. The major thrust of the research is the development and validation of a classification tool with preparation for a demonstration project in the final phase. If approved, the project will cover a two and one-half year period. In conjunction with the research project, the Alberta Hospital Services Commission plans to implement information and education programs related to the "Types of Care" concept. These programs are directed toward professional associations and health care institutions as well as the public.

AMERICAN

Recent legislation in the United States calls for "the need for demonstration and evaluation of alternate methods of caring for chronically ill and elderly patients" (Jones, 1973, p. iii). Similar concerns were expressed in recommendations of the Commission on Chronic Illness in the United States in the early 1950's when it saw the need for development of uniform criteria and terminology in the assessment of long-term care patients (Ryder, 1971). Many research projects have been identified in this literature search which were supported by Government funds towards this goal.

A series of workshops sponsored by the U.S. Public Health Service during the years 1965-69 focused on the feasibility of developing a uniform system of patient assessment. It became evident that, rather than combining systems already in use, it would be necessary to carry out comprehensive, in-depth research. An outgrowth of these meetings was a collaborative project undertaken by four research groups to develop a patient assessment system to be used for a variety of purposes and in particular in the long-term care field (Jones, 1973). Financed by a HEW Research grant, the studies resulted in the development of a Patient Classification System and a User's Manual, which it is hoped will have widespread use, and , through uniform patient assessment will provide data which can be evaluated to show the effect on patient groups in different care systems. Field experience will also lead to improvement in the classification tools. The classification system is designed to produce information for the purpose of program evaluation, individual patient care, resource allocation in single institutions and the community as a whole, planning, policy determination, research, and teaching in the chronic disease field (Jones, 1973, p. iii). It is this investigator's impression that the emphasis in this work is assessment rather than classification, the term used by the authors. The grouping of patients (or classification) appears to be by placement location where needs can be met, rather than by groups of patients with like needs which might be met in a variety of settings, i.e., the home, ambulatory program environment or institutional setting.

COMPONENTS OF A MULTI-DIMENSIONAL CLASSIFICATION

As reported by Jones (1973), a fundamental requirement of a classification system is that the linguistic base is well defined, clearly understood and systematically used. To promote reliability and validity, the conceptual framework of the system should be stated and the characteristics of the classification's components identified. The descriptors used in the Patient Classification for Long-Term Care, (1973) are, firstly, patient oriented. They should describe the patient as he is, in his usual environment, with programs and services currently being provided. This includes, for example, his functional status in relation to physical activities of daily living (ADL).

Secondly, the descriptors should be multi-dimensional. There is a need for information about the patient's status from several points of view. For example, information regarding physical function, impairments, medical risk factors and sociodemographic status provides a more accurate assessment base than using a single perspective. A major limitation of the above classification system is the lack of descriptors related to psychological functional status which often is a critical factor in assessment, classification and placement decisions.

Thirdly, the descriptors should be stated in objective rather than subjective terms. This criterion is essential if reliability or reproduceability is to be obtained when the classification is carried out in a variety of settings. The use of "ability" or "capacity" is not acceptable, both because of its subjective nature and the more practical point that assessment of nonobservable phenomena is unreliable. In order to meet the criterion of objectivity the use of "prognosis" or "potential for improvement" is not permitted by the researchers, although knowledge of it would be helpful.

Fourthly, the descriptors must be relevant for the purposes of the classification. "Relevance is determined primarily by significance for potential outcomes - mortality and specified measures of morbidity, including functioning status - as demonstrated by epidemiologic research" (Jones, 1973, p. 7). This criterion was a limiting factor in the work reported by Jones, as only determiners related to patient outcome are included in the standardized list, however, other determiners may be added to provide additional information.

The assessment portion of multi-dimensional classification systems studied by this author have in common a section on the medical status of the patient and a section related to physical functioning. Many also incorporate a section related to the psychological or mental status.

The medical assessment identifies whether or not the patient has a disease and what impact the disease condition has on the clinical state and prognosis of the patient (Burack, 1965). Risk factor measurements, impairments and medically defined conditions are considered to be the medical status profile of the patient in the classification system described by Jones (1973).

The Geriatric Rehabilitation program in Illinois uses a medical history and physical examination as well as a social history, and impression of the psychological functioning and history of hospitalizations, as the basis for admission into the program (Gordon, Kohn, Sloan, Peavyhouse, Anderson, Wagner, Roberts, Young & Elfenbaum, 1962).

The medical component of assessment is ensured under the Assessment and Placement Services (APS) at Hamilton, Ontario. The direct involvement of a physician who is the medical director assures liaison with all physicians in the community, involvement with clinical aspects of referrals to APS, development of policies and guidelines, assistance to assessment consultants and consultation with all physicians in the community who refer patients to APS (Barker & Bayne, 1974).

The functional status component of assessment is well documented in a variety of studies. The Index of Independence in Activities of Daily Living (Index of ADL) was developed "as a measure of function which could be used in objective evaluation of chronically ill and aging populations" (Katz, Downs, Cash & Grotz, 1970, p. 20). As reported in many articles by Katz, the Index has been used as a tool to accumulate information about prognosis, and about the dynamics of disability and aging; to assess the need for care; to determine effectiveness of treatment; and as a teaching aid in rehabilitation. The Index of ADL summarizes the overall performance in six functional areas, namely, bathing, dressing, toileting, transfer, continence and feeding. As described by Katz (1970), the assessment procedure is carried out as follows:-

> By means of a series of questions and observations, the observer forms a mental picture of the patient's ADL status as it existed during a 2-week period preceding the evaluation. The observer determines whether another person assisted the patient or whether the patient functioned alone, defining assistance as active personal assistance, directive assistance, or supervision. The actual existence of such assistance is considered in the evaluation, not the potential or ability of the patient. Thus for example, overprotective assistance is defined as assistance although the observer considers the patient as more able; and refusal to perform a function is considered non functioning although the patient is deemed able (p. 20).

Observations are tabulated on a three point scale and then converted into the seven categories of the Index, which indicates the degree of dependency.

A review of the rehabilitation literature carried out by Bruett and Overs (1969) identified twelve ADL scales developed since 1951.

Designed by medical and para-medical professionals, the purpose of the ADL scales was to inventory the degree of ability of patients with impairment, including hemiplegia and other chronic disabilities. Three reasons for constructing ADL scales were noted, similar to those discussed by Katz, and the methodology and measures for reliability and validity studies were outlined. Of the twelve studies analyzed, five used a three step scale, four used a two step scale and three used a five step scale. Measurement of two to twelve activities were included which identified functional status in the natural environment.

Other studies on patient classification discussed the need for assessing the functional status of the patient (Akpom, 1973; Albers, 1969; Bayne, 1972; Bloom, 1970; Burack, 1965; Dinnerstern, 1965; Ellwood, 1966; Gaitz, 1970; Gurel, 1972).

The components of assessment related to mental and psychological functioning are documented by, among others, Bloom (1971), Gurney (1972), Meer (1966), and Wechsler (1945). Problems in mentation related to orientation, memory, comprehension, judgement and integration of facts and ideas may appear individually or in combination and may be intermittent or constant. The most common diseases affecting mentation are stroke and cerebral arteriosclerosis in the chronic care patient. Some patients are aware, to some degree, of their deficits which causes worry and development of defensive mechanisms to cope with the situation. As reported by Bloom (1971), denial of the problems may occur more in the maximally deficient than those minimally so. Denial, if present, makes it difficult to accurately assess the level of function.

Most patients, and especially the elderly, tend to become confused or delirious in the course of acute physical illness. Some of the causes identified are stroke, cerebral hypoxia, acute infections, metabolic upsets, surgical operations, fractures, head injuries and over-utilization of drugs. Outcomes of acute confusion are recovery of mental equilibrium in a short period, death brought on by the physical illness, or permanent inpairment referred to as chronic brain syndrome (Kyle, 1974). Therefore, the need for assessment of mental and psychological functioning in the acute care setting is obvious.

As reported by Gurel (1972), "a viable technology for the systematic recording of behaviour in non-psychiatric chronically ill populations is presently more a hope than a reality" (p. 83). Many published studies in this area tend to neglect the aspect of functional status relating to behavior and disturbed mental processes.

In conclusion, the literature on components of Patient Care Classification Systems stresses three major areas: medical status, physical functioning and, to a lesser degree, psychological or mental functional status. Other areas discussed are socio-demographic and economic components which may have an impact on the placement process.

SUMMARY OF THE LITERATURE REVIEW

The major emphasis of this chapter has been a discussion of patient care classification as an integral component of a systems model of health care delivery. Approaches to classification with related advantages and disadvantages, as well as the components of the multi-disciplinary classifications were identified. Government involvement, including American and Canadian, both Federal and Provincial, was studied. It would seem that patient care classification is one method of facilitating the goal of having the patient in the right place, with the right service, at the right time. Relevant information as to the health and social needs of individuals is a requirement for rational health planning in order to mobilize services to meet manifest needs, rather than to meet current demand.

CHAPTER III

METHODOLOGY

THE BASIC RESEARCH DESIGN

The objective of the study is to construct an instrument to assess and classify patients into the five Types of Care as defined in the Federal W.P.R. and to test the instrument by use of a clinical analytical survey. The five major stages of the study are as follows: (1) construction of the instrument, (2) a pretest of the instrument, (3) revision of the instrument and development of a User's Manual based on findings of the pretest, (4) a clinical analytical survey, and (5) analysis of the survey data to determine the characteristics of the study population and ascertain the degree of reliability and validity of the instrument by applying parametric and nonparametric statistical procedures. We shall now turn to an in depth description of these stages of the research design.

DEVELOPMENT OF THE INSTRUMENT

An intensive review of the literature and correspondence with government officials and researchers in Canada and the United States provided basic knowledge of the assessment systems currently in use, or in the developmental stage. Assessment instruments provided in the Appendix of the Federal W.P.R. were also helpful in determining the variables necessary for providing data which would permit discrimination between Types of Care. One factor that had to be kept in mind was the necessity of utilizing variables which would be applicable to patients with acute care needs as well as those requiring long term care. Because no classification systems have been developed related to Types of Care, professional judgement of health care specialists plus assistance from statistical experts were used as adjuncts in developing applicable variables.

A small pilot test was carried out and changes in the instrument made, based on assessors' omissions and misinterpretations. A meeting with representatives from administrative, nursing and social work staffs of the institutions involved in the study was held and suggestions for changes were received by the investigator. Following further revision, a pretest was undertaken, using the instrument in its modified form (c.f. Appendix 1).

An inter rater reliability study of the pretest, as well as a validity study of the classification portion of the instrument and statistical procedures to show meaningful patterns of relationship among the independent and dependent variables, indicated an acceptable degree of reliability and validity. Nevertheless, it was felt that reliability and validity could be improved by the inclusion of additional assessment variables and the development of a User's Manual which would provide operational definitions for every category of each variable. Depending heavily on the work of Jones (1973), the investigator prepared a manual, a copy of which was provided for each assessor involved in the survey (c.f. Appendix 3).

The instrument used in the survey was comprised of independent variables (the assessment determiners) and the dependent variables (classification determiners) (c.f. Appendix 2).

THE INDEPENDENT VARIABLES

The assessment component of the instrument is broken down into five sections: (1) Identification, (2) Medical Status, (3) Physical Functioning, (4) Psycho-Social Functioning, and (5) Service Requirements.

Identification includes biographical data, location, amount and source of psycho-social support, whether or not the patient is awaiting alternate placement, time on the waiting list, placement requested, and deterrents to the optimum placement. The degree of dependency on supervision is also included, which the investigator perceived to be related to present location and/or optimum placement. The second section, related to medical status, attempts to identify factors related to the medical status profile of the patient. Major items include: acute diagnosis, not yet diagnosed, chronic conditions, severity of impairment at the present time and a prediction for three months and one year, whether or not the clinical condition is stable, major health risks, potential for improvement through coordinated rehabilitation programs, and the time span between reassessment of the care program. By using several items, including diagnosis, the investigator attempted to identify groups of patients who, because of their present medical status and with some prediction of future status, will exhibit similar needs for care now and in the future.

The third section, Physical Functioning, provides information regarding the degree of impairment of the patient in three senses: sight, hearing and speech. The remainder of the section refers to Activities of Daily Living, that is, activities that are common to all human beings and that are necessary for basic social existence. Section 4, Psycho-Social Functioning, refers to the ability of the patient to perform basic social functions in a manner appropriate to his environment. Variables relate to communication, behaviour, memory, judgement, mood and initiative in participating in social activities.

The final assessment section is an attempt to provide information regarding the therapy and treatments required by the patient. The professional health care person acting as assessor, with input from others, defines the service requirements that the patient could benefit from. These requirements may already be components of the care he is receiving and/or they may be requirements that, if provided, would assist the patient to maintain or increase his functional ability to its optimal level.

To summarize, the assessment component of the instrument is comprised of a set of determiners which are patient oriented, multidimensional in content, objectively stated and precisely defined. The majority of assessment items are scaled to discriminate among patients according to their degree of dependency; from none or minimum, to high dependency.

THE DEPENDENT VARIABLES

The classification component of the instrument is made up of three classes of determiners: Types of Care, sites where patients' needs can best be met, and programs needed for those patients whose needs can be met in a non-institutionalized setting.

The Types of Care and related patient characteristics are used verbatim from the Federal W.P.R. To avoid misinterpretations, the description of the Types are quoted below, directly from the Report:

Type I Care -

is that required by a person who is ambulant and/or independently mobile, who has decreased physical and/or mental facilities, and who requires primarily supervision and/or assistance with activities of daily living and provision for meeting psycho-social needs through social and recreational services. The period of time during which care is required is indeterminate and related to the individual condition.

Type II Care -

is that required by a person with a relatively stabilized (physical or mental) chronic disease or functional disability, who, having reached the apparent limit of his recovery, is not likely to change in the near future, who has relatively little need for the diagnostic and therapeutic services of a hospital but who requires availability of personal care on a continuing 24 hour basis, with medical and professional nursing supervision and provision for meeting psycho-social needs. The period of time during which care is required is unpredictable but usually consists of a matter of months or years.

Type III Care -

is that required by a person who is chronically ill and/or has a functional disability (physical or mental), whose acute phase of illness is over, whose vital processes may or may not be stable, whose potential for rehabilitation may be limited, and who requires a range of therapeutic services, medical management and skilled nursing care plus provision for meeting psycho-social needs. The period of time during which care is required is unpredictable but usually consists of a matter of months or years.

Type IV Care -

is that required by a person with relatively stable disability such as congenital defect, post-traumatic deficits or the disabling sequelae of disease, which is unlikely to be resolved through convalescence or the normal healing process, who requires a specialized rehabilitative program to restore or improve functional ability. Adaptation to this impairment is an important part of the rehabilitative process. Emotional problems may be present and may require psychiatric treatment along with physical restoration. The intensity and duration of this Type of Care is dependent on the nature of the disability and the patient's progress, but maximum benefits usually can be expected within a period of several months.

Type V Care -

is that required by a person:

(a) who presents a need for investigation, diagnosis or for definition of treatment requirements for a known, or unknown, or potentially serious condition; and/or

(b) who is critically, acutely, or seriously ill (regardless of diagnosis) and whose vital processes may be in precarious or unstable state; and/or,

(c) who is in the immediate recovery phase or who is convalescing following an accident, illness or injury and who requires a planned and controlled therapeutic and educational program of comparatively short duration.

The numerical system in its progression from Type I to Type V reflects the increasing qualifications, numbers and variety of staff, increased costs and increased complexity of services required (Federal W.P.R., pp.25-27).

It can be seen that patient characteristics and related needs are the criteria which determine the Type of Care and the program placement requirements. Once the patient is admitted to the appropriate location or program, further assessment is required to augment the information in order to identify problems, set objectives and define a treatment plan to meet the physical and psycho-social needs of the patient. Further discussion of the specific patient characteristics related to each Type of Care will be undertaken in the section dealing with content validity in Chapter IV.

The second set of dependent variables are related to the sites where the needs of the patient can best be met. They range from the home, boarding home or senior citizens' lodge with appropriate support services, to long term care facilities, specialized hospitals for rehabilitation or psychiatric care, and to the acute care general hospital. There are three central modes of health care delivery within each Type of Care. That is, a home care component in which services are brought to the patient in his home; ambulatory services, in which the patient utilizes services and programs on an out-patient basis; and inpatient services, in which patients with similar needs are grouped together in an institutional setting. Based on the patient's medical status, physical and psycho-social functioning and socio-demographic considerations, a decision must be made as to the suitable mode of delivery of health and social services. This decision should be made with input from the patient, the family, the physician, social workers and nurses who may all bring a separate viewpoint which will potentially assist in making the most accurate placement. An operating principle should be that if there is disagreement as to the appropriate Type of Care, the more complex kind of care should be the one chosen (Federal W.P.R., 1973, p. 44). Ongoing evaluation and assessment should be undertaken to check the effectiveness of placement as the patient's needs change over time.

Finally in this study, the programs required by patients in non-institutional settings are considered to be dependent variables. The assumption is that if a patient is in an institutional environment, treatments and therapy as identified in the assessment component of the instrument are available to meet his needs. However, those who can remain at home or be transferred to the home environment may require community programs which now exist or, on the other hand, should be developed.

To summarize, the dependent variables are the classification component of the instrument. Based on the assessment of medical status, physical and psycho-social functioning and knowledge of the patient's social milieu, as well as an in depth knowledge of the definitions and patient characteristics of each Type of Care, the assessor classifies the patient into the appropriate Type of Care, the site where needs could best be met and community programs required by those in a non-institutional site.

THE POPULATION

The population for the clinical analytical survey, with the exception of pediatric and obstetrical patients, included all individuals institutionalized on the study day in the general and auxiliary hospitals and two nursing homes. Also included were individuals in their home or in the senior citizens' lodge who were awaiting placement in the long-term care facilities. A total of 490 persons were included in the study.

THE ASSESSORS

As reported in the literature, the two most common methods of gathering data regarding the overall status of patients are: (1) evaluation by a specialized research team who may assess the patient in his usual environment or by taking him to a clinic setting and (2) evaluation by staff members who are familiar with all aspects of the patient because of their close contact (Gurely, 1972; Meer & Baker, 1966). The latter method was chosen for use in this study for several reasons. First, the nurses who have contact with the patient are in the best position to assess the physical and psycho-social functioning of the patient. They also have an opportunity to meet family members and so there is the potential of their having an awareness of socio-demographic factors. Second, community health nurses are familiar with the assessment of patients' needs in the home environment, therefore, their involvement is valuable for evaluation of patients awaiting placement in the long term care facilities. Third, the nurses are in the best position to obtain input to the assessment from physicians, social workers, rehabilitation professionals, the patient and his family. Major emphasis is placed on the interdisciplinary approach to assessment and classification, that is, the involvement of as many individuals concerned as possible, to provide the most accurate assessment of current need and a prediction for future requirements for care. Another aspect which might be considered as "spin off" value in using nurse assessors is the benefit of users' involvement: the study provides an opportunity for an objective look at the overall aspects of patient care and a critical evaluation of the programs and services currently being provided. Feedback to the investigator indicated the need for this kind of exercise, even without reports related to frequency distributions or any statistical analysis. Finally, a research team, including experts from several health professions, was not available because of, among other factors, financial constraints. Even without these constraints, the investigator would have chosen nurse assessors because of their intimate knowledge of the patients.

A caution must be expressed to the reader. Everyone involved, including the assessors, brings to the study past experience, different perceptions, understanding and expectations which may influence their approach. Just as this can be an asset, it may also be considered as a limitation. When perceptions become static, a willingness to accept the status quo develops, rather than the willingness to look for potential for change or alternatives to current practice. Orientation of the assessors stressed the need to evaluate the alternatives related to program-placement, in order to make the optimum decision on which to base the most efficient and effective care.

THE PRETEST

Following verbal orientation of the assessors, a pretest was carried out on a chosen study day, to assess and classify patients in the general hospital (excluding pediatric and obstetrical patients), auxiliary hospital, two nursing homes, and those individuals awaiting placement in the long-term care facilities. As well, all admissions to the general hospital for one week following the study day were included, to help identify any potential need for ambulatory care programs. A total of 542 patients were assessed for the pretest survey. This would appear to be an unnecessarily large population to use for purposes of a pretest. However, the community planners were interested in obtaining an estimate of the population characteristics. The information obtained was given to the health planner with the caution that, unless the instrument was found to be reliable and valid, the data could not be considered a true reflection of the population under study. Nurses and a small number of social workers involved in the care of the patients acted as assessors.

The purpose of the pretest was to provide a beginning test of the use of the instrument and to gather data on which statistical procedures could be undertaken in order to get a beginning indication of the degree of reliability and validity which could be expected from use of the instrument. It also afforded the investigator an opportunity to become familiar with the method of conducting a clinical analytical survey as well as applying the statistical procedures required.

REVISION OF THE INSTRUMENT AND DEVELOPMENT OF A USER'S MANUAL

Findings based on data from the pretest indicated an acceptable degree of reliability and some indication of validity. However, it was perceived that these levels could be improved. Therefore, based on suggestions from the users, more in depth analysis of instruments discussed in the literature and input from experts in the field, additional variables were developed to enhance the discriminability of patients into the five Types of Care. The additional variables may be identified by a comparative analysis of the instruments found in Appendices 1 and 2.

A problem identified by the investigator as well as by the assessors related to the specific meanings of each category within the items. For example, what does "some help" refer to in relation to walking? One assessor may perceive this term to mean the use of crutches, whereas another may think it means the help of one or more persons to assist the patient to ambulate. Although there was an attempt to verbally interpret the meaning of each category to the assessors at the orientation meeting prior to the pretest, it was the general concensus that this approach was inadequate. Therefore, the development of a User's Manual was undertaken for use in the survey.

The work instituted in the United States by Dr. Paul Densen and associates from four research groups was heavily relied on for developing the framework and content of the User's Manual. It must be noted that many of the operational definitions are used verbatum from their User's Manual prepared by Jones (1973). A discussion of the purpose of the study, background information and the method used to assess the patients was included, as well as the operational definitions related to each variable (See Appendix 3).

THE SURVEY

The clinical analytical survey was undertaken. This provided a "snap shot" view of the patient characteristics and related program placement requirements of the study population on the day of the survey. The physical and psycho-social functional status of the patients receiving acute care was determined as of that day; the usual status in the past two weeks was the basis for assessment of the long-term care patients.

Previous to an orientation meeting, copies of the instrument and User's Manual were distributed to the assessors so that they might become familiar with the study objectives, the variables and related operational definitions, as well as the Types of Care and related patient characteristics. Thus, they were prepared to ask questions regarding areas which were unclear. This preparation was done and clarification provided so that, from feedback at the meetings, the investigator was confident that the nurse assessors had a good understanding of their role in the survey.

Data was gathered on the day of the study or as soon after as possible, considering the large number of assessments which had to be done by one nurse, especially in the nursing homes. A community health nurse and the Regional Long-Term Care Assessment Officer were responsible for the assessment of individuals in their homes and in the Senior Citizens' Lodge. The Assessment Officer also acted as coordinator of the project and was available on the study day to help any assessors who required assistance. Table 3.1 shows the job categories of the assessors in each of the study locations.

Timing studies indicated that the average assessment for acute care patients took approximately five minutes, ten minutes for patients in the long-term care facilities and approximately thirty minutes in the home or lodge environment. The latter time reflects the fact that the assessor had less prior knowledge of the information required in the assessment of these individuals.

The completed instruments were returned to the coordinator who checked them for missing data. If any were found, the form was returned to the assessor to complete. This was the only purpose of having the assessor's name on the instrument. The completed instruments were then sent to the investigator who coded them in preparation for key punching.

TABLE 3.1
JOB CATEGORY
OF ASSESSOR BY LOCATION OF PATIENTS

N = 490

	Director of Nursing	Supervisor	Head Nurse	General Duty Nurse	Community Nurse	Assessment Officer	Total
General Hospital	0	10	88	42	0	0	140
Auxiliary Hospital	15	63	9	0	0	0	87
Riverview Nursing Home	127	0	0	0	0	0	127
Sunnyside Nursing Home	30	0	0	68	0	0	98
Sr. Citizens' Lodge	0	0	0	0	0	6	6
Home	0	0	0	0	3	5	8
Other	0	0	0	0	0	1	1
TOTAL	172	73	97	110	3	12	467
Missing Observations = 23							

CODE VALUES FOR VARIABLES IN STUDY DATA

In order to be able to have a clear understanding of the descriptive as well as the statistical analyses, the reader is referred to Appendix 4 which identifies the coding system for the study data. An explanation of the transformation of some variables, some categories of variables and the formation of dummy variables will now be undertaken.

To determine the length of stay, time on waiting list and the age of the patient, variables were transformed and categories created from date of admission, date of request for placement and year of birth to the above. Length of stay contains categories 1 to 8, from shortest to longest stay, as shown in Table 4.2. Time on waiting list was divided into categories 1 to 4 and age into categories 1 to 7, as shown in Tables 4.4 and 4.6.

Missing values were originally coded 0 for the computer programs which would handle them. When doing factor analysis and discriminant analysis, no missing data are allowed in the variables being used for the analysis, therefore, further recoding was done in order to maintain the highest population as possible. Manipulation of several variables was undertaken to change missing data to the category of the variable with the highest frequency so that data for all the variables related to that patient would not be lost. In the following items, the missing data were transformed to the first category: 4, 14, 15(a), 17, 19(b) and (c), 20 (a) and (b), 21, 22, 23, 24, 25, 27, 29, 30, 31, 32, 33(b), 34, 36, 37(a)(b) and (c). Items 15(b) and (c) and 38 had missing values transformed to the second category, item 10 to the third category, and item 18 to the fourth category.

With the exception of items 26 and 27 relating to bladder and bowel function, all items in Section C had three categories. Therefore, transformation of the above two variables was done to group like categories to make a total of three. In the case of bladder function it was decided that categories 3, 4 and 5 constituted a major problem, so these were amalgamated. For bowel function, a patient who has an ostomy but needs no assistance was grouped with those in the first category. Those with an ostomy who require assistance were grouped with those in the second category. With these transformations, all items in Section C were analyzed with codes 1, 2 and 3 for no problem, some problem, major problem categories, respectively.

For purpose of factor analysis and discriminant analysis with Bayesian Classification, it was necessary to construct dummy variables to cause new variables to be formed from the values or categories of certain variables. A dummy variable is one that has only two values; 1 for presence of the characteristic in question, and 0 for its absence. Types of Care was changed to five dummy variables, one for each Type of Care. The variable site was changed to make six dummy variables, one for each location when home, boarding home and lodge were combined. The variable related to behavior was changed to make two dummy variables, wander and abusive, which were the two most critical categories of the original variable.

RELIABILITY STUDIES

The term reliability means the consistency with which a set of item responses measure whatever they do measure (Ebel, 1972).

Any research based on measurement must be concerned with accuracy, dependability, repeatability or reliability of the measurement. Many researchers regard reliability as a minor step in the preparation of the more important studies of validity. Although a measure which is reliable is not necessarily valid, we must recognize that, for an instrument to be valid, it must also be reliable. As Ebel states:

> Clearly, a test (instrument item) that measures accurately what it is intended to measure also measures with equal or greater accuracy whatever it does measure. Hence to the degree that a test is valid it must also be reliable. Further, a test (instrument item) cannot measure what it is intended to measure more accurately than it measures whatever it does measure (Ebel, 1972, p. 444).

The emphasis on item reliability in this study is based on its usefulness for instrument construction and revision. By such analysis the investigator is able to identify the strength or weakness of each item in terms of its consistency or repeatability.

"The preferred way to find out how accurate one's measures are is to make two independent measurements and compare them" (Cronbach, 1951, p. 297). The reliability study reported here was carried out by the inter-rater method, i.e., two independent raters assessed the same patient. Because of the cost of assessors' time involved in duplication of the data collection for the reliability study, a stratified random sample was selected out of the study population of 490 patients. The total sample size selected was 100 patients which was deemed sufficient to provide stable estimates of item reliabilities.

STRATIFICATION OF SAMPLE

Because of the variation in the population size in the various institutions and on the waiting list, Neyman's Allocation Formula was used for efficient allocation of the sample to each stratum (Raj, 1972, p. 52). Using

Neyman's formula, the sample size N_h, for stratum h is proportional to $N_hS_{yh}/\sqrt{C_h}$, where C_h is the time taken per unit in the stratum, N_h is the number of units in the stratum and S_{yh} is the standard deviation. The standard deviation of the item STAY from the pretest, broken down by location, as a proxy for Types of Care, was used as the criterion variable because it was found to be the most discriminating interval variable in the pretest findings. The cost (or time) taken for collecting information differed from stratum to stratum, therefore, the sample size taken from a stratum was small if the time taken for collection information was large.

Bed numbers within each institution were chosen by use of random numbers and the patients in these beds were used for the inter-rater study. Individuals awaiting placement were chosen at random from their position on the waiting list. The occupancy in the long-term facilities was 100%, and approximately 90% in the general hospital. Adjustments were made accordingly so that if a bed was chosen with no patient, there would still be a patient sample size of approximately 100. Table 3.2 shows the calculations and distribution of patients for the inter-rater study.

TABLE 3.2

STRATIFICATION OF BEDS BY LOCATION
FOR INTER-RATER RELIABILITY STUDY

	# of Beds N_h	St. Dev. S_{yh}	Cost (Time) C_h	Allocation Formula $N_h . S_{yh} / \sqrt{C_h}$	Allocated Sample (Patients)	% Occupancy	Allocated Sample (Beds)
General Hospital	195	1.182	5	103.1	40	90%	45
Auxiliary Hospital	91	2.054	10	59.1	23	100%	23
Riverview Nursing Home	130	1.318	10	54.2	21	100%	21
Sunnyside Nursing Home	95	1.137	10	34.2	13	100%	13
Waiting List	25	1.372	30	6.27	3	100%	3
TOTALS	536			256.87	100		105

ANALYSIS OF THE INTER-RATER DATA

Data collected in the reliability study are analyzed to provide bivariate tables comparing the ratings of one assessor to another. A number of statistics were applied to test or measure the extent of reliability of each item. These statistics included chi square and its degrees of freedom, the contingency coefficient C, phi coefficient or Cramer's V, Kendall's Rank Correlation Tau for ordinal variables, and the percentage of agreement on the item by two raters or assessors.

A chi square analysis to test the lack of statistical association between the two ratings is appropriate for data obtained when two responses are measured on each item. The contingency coefficient C, a measure of the extent of association or relationship between the data obtained from the two independent assessors, is calculated to adjust the chi square for chi square plus N. Its values range from 0 to .707 for a 2 x 2 table; but the upper limit changes size as the table size increases. Therefore, comparison of values can only be done on tables the same dimension (Nie; Bent; Hull, 1970).

The statistic phi is used to make a correction for the fact that the value of chi square is directly proportional to that of N by adjusting the χ^2 value. For a 2 x 2 table, its values range from 0, when there is no relationship, to 1, when the relationship between the two variables is perfect. When phi is calculated on a table which is not 2 x 2, it has no upper limit. Therefore, Cramer's V is used to adjust phi for either the number of rows or columns which exceed 2. Its values will range from 0 to 1 regardless of the size of the table. When the table being tested is 2 x 2, the value of Cramer's V will equal the value of phi (Nie; Bent; Hull, 1970).

Those variables which are considered to be ordinal are tested by Kendall's Rank Correlation Tau which is a measure of disarray. Kendall's coefficient of rank correlation is defined as the obtained value of disarray divided by its maximum possible value. It has a value of -1 when the paired ranks are in an inverse order, and a value of +1 when the paired ranks are in the same order (Ferguson, 1971).

The final measure reported on the inter-rater reliability study is the percent agreement between the two assessors. The total of perfect agreements for each category of a variable is divided by N and multiplied by 100. These percentage agreements are then added together and divided by the number of variables to obtain an overall mean percentage agreement. In those cases where the percentage agreement of a single category of a variable is required, the method is as follows: the number of agreements is multiplied by 2 and divided by the row, plus the column totals, and multiplied by 100. It must be noted that a high overall percentage agreement on any item does not necessarily imply high agreement on each category of the item.

None of the above measures can be considered equivalent to the so-called "reliability coefficient" of test theory (Ebel, 1972, p. 416), which is a variance ratio between 0 and 1, although both Cramer's V and Kendall's Tau must also be between 0 and 1. The reason for this nonequivalence is that the data of this study do not conform to the requirement of interval scale measurement assumed by test theory for defining a reliability coefficient, hence, other measures of reliability are used.

VALIDITY STUDIES

"Validity is a criterion for evaluating the quality of the data. Data are valid if they actually measure what they are supposed to measure. Another term for validity is relevance" (Abdellah & Levine, 1965, p. 712). Many other definitions exist for this quantitative concept. As stated by Ebel (1967), there are a variety of definitions with some similarities, but also important divergencies. For example, there are those which deal with correlation with a criterion (Gulliksen, 1950), an estimation of a corrected correlation coefficient (Cureton, 1951), those which avoid statistical terms, stressing accuracy in relation to the user's intent (Lindquist, 1941), those which relate validity to utility (Edgerton, 1949), as well as those related to the interpretability of the scores (Cronbach, 1960). It can be seen that it is "difficult to state in words a core meaning common to all the various definitions of test validity" (Ebel, 1967, p. 220).

The basic question to be answered in validity studies is the degree to which the instrument or test measures what it is supposed to measure. However, the underlying question is -- do we actually know what we are trying to measure? Have we the ability to measure human characteristics and, for that matter, to define the specific characteristics which are considered to constitute the criterion measure? Only through research and application of the findings of research will we be able to answer these questions with any certainty.

CRITERION MEASURES

For purposes of this study, the criterion measures, or dependent variables, are the Types of Care and related patient characteristics as defined in the Federal W.P.R. No attempt has been made to alter them, although there is reason to believe that there are omissions in relation to coverage of the total spectrum of health and social needs within the population exhibiting morbidity. As such, these criteria may or may not be an "ideal" basis on which to develop a valid instrument. However, they were devised by a group of highly skilled health professionals as a "base upon which to build classification systems and at the same time encourage further research and development" (Federal W.P.R., p. 1), and would seem to constitute the most useful ground point for this study, given the "state of the art" at this time.

KINDS OF VALIDITY

Studies relating to five kinds of validity were undertaken to identify the accuracy of the data gathered by use of the items in the instrument. A short discussion of the meaning of each kind of validity, plus the methods utilized to identify their degrees of attainment, will be undertaken in the following order: face, content, construct, concurrent and empirical validity. It should be noted at this point that no attempt was made to identify the predictive validity of the instrument. Although the investigator recognizes the importance of the relation of item responses to performance at a later time, it is beyond the scope of the study to undertake predictive dimensions.

Face Validity: Although the concept of face validity has fallen into disrepute in some research circles, it can constitute an indication that, with further study and statistical analysis, validity will be identified. A measure can be "assumed to be valid for the prediction of an external criterion if the items which compose it 'appear on their face' to bear a common-sense relationship to the objective of the test" (Mosier, 1967, p. 208). In the clinical setting, the measure should appear to be practical, pertinent and related to the purpose of the study. The methods used in this study to get an indication of face validity were twofold: (1) individuals involved in the study were given an opportunity to assist in the development and testing of the instrument; and (2) verbal feedback from board members, administrative staff, physicians, nurses and social workers was obtained. The instrument has been used in another community since the completion of the original study, a fact which could be interpreted as reflecting the instrument's face validity, in the case of at least one other set of users.

Content Validity: Content validity is defined as being "concerned with the adequacy of sampling of a specified universe of content" (Ebel, 1972, p. 437). In order to ensure that the instrument items were a sample of the universe of items which relate to the objective of the study, an extensive review of the related literature was undertaken. Further, an analysis of patient characteristics defined in the Federal W.P.R. was undertaken, and items were included in the instrument to measure all characteristics mentioned. As well, information was gathered through personal correspondence and interviews with specialists in the areas of health care delivery, test construction and statistical methodology. All these sources were utilized to provide input to instrument development.

Construct Validity: "Construct validation is involved whenever a test is to be interpreted as a measure of some attribute or quality which is not 'operationally defined'" (Cronbach & Meehl, 1967, p. 245). In an attempt to identify the underlying constructs which account for the variance found within the data gathered by use of the instrument, factor analysis was used. "Factor analysis is a method of determining the number and nature of the underlying variables among larger numbers of measures. ... It may also be called a method for extracting common factor variances from a set of measures" (Kerlinger, 1973, p. 659). By use of factor analysis, the investigator is able to reduce the number of measures to greater simplicity. It shows which measures belong together, which ones measure the same construct and to what degree. Thus, it reduces the number of variables required and helps to "locate and identify unities or fundamental properties underlying tests and measures" (Kerlinger, 1973, p. 659). Two separate factor analyses were done, one relating to the assessment variables, the other to the classification component of the instrument.

Concurrent Validity: "Concurrent validity is concerned with the relation of test scores (instrument items) to an accepted contemporary criterion of performance on the variable that the test (item) is intended to measure" (Ebel, 1972, p. 436). Two methods were used to evaluate the extent of concurrent validity. In the first method, the objective was to determine the concurrent validity of each assessment item by measuring its degree of relationship to the dependent variable, Types of Care. Thus, the first method can be referred to as that of concurrent item validities. In the second method, the investigator attempted to evaluate the overall validity of the assessment and classification by use of discriminant analysis and Bayesian Classification.

Concurrent item validities were determined by cross classification of each assessment item (independent variable) by Types of Care (dependent variable), resulting in chi squares with related degrees of freedom, contingency coefficients C, Cramer's V and Kendall's Rank Correlation Tau. These statistics were produced to test or measure the extent of the item validity by identifying the relationship between each item and Types of Care. Some characteristics of these statistics have been described in the previous section on Reliability.

Another method of statistical analysis employed which related to concurrent validity was that of discriminant analysis and Bayesian Classification. Discriminant analysis and Bayesian Classification procedures are multivariate techniques based on statistical theory under some assumptions (Bay, 1971). In this study,the objective was to classify each patient into one of five Types of Care, employing known characteristics related to medical status, physical and psycho-social functioning and demographic considerations as the independent variables.

The assumptions related to the classification procedure are: (1) The patient to be classified belongs to only one of the Types of Care. "There should not be an ambiguity about the definitions of the groups, they should not overlap each other, and the groups are mutually exclusive and exhaustive of the population, that is, everyone in the population should belong to one group, and none belongs to more than one group or is left without group association" (Bay; Lee; Flathman; & Roll, 1974, p. 4). (2) The population characteristics are known or can be estimated from the information obtained by the items on the instrument which provide predicting power or discriminating capability about the Type of Care in which the patient should be. In other words, the independent variables must have the ability to differentiate group characteristics.

A detailed description of the mathematical considerations related to discriminant analysis can be found in Cooley and Lohnes (1971) and Dixon (1973). The Biomedical Computer Program BMD07M was used, which is a stepwise discriminant analysis. The description of the program is as follows:

> This program performs a multiple group discriminant analysis. A set of linear classification functions is computed by choosing the independent variables in a stepwise manner. The variable entered at each step is selected by one of four criteria, and a variable is deleted when its F- value becomes too low. Using these functions and prior probabilities the posterior probabilities of each case belonging to each group are computed. The program also computes the coefficients for canonical variables to give a two dimensional picture of the separation of the groups. The groups are evaluated in pairs for significance of differences of means by the F ratio equivalent of Hotelling's T-square. The joint separation of the several groups is summarized in terms of the U-Statistic and its approximately equivalent F (Dixon, 1973, p. 15).

The prior probabilities are based on the sample size of patients within each Type of Care as perceived by the Medicine Hat Assessors. The 74 variables including original and dummy variables chosen for the analysis are those which (1) have no missing data, (2) have adequate variability or number of cases in each category, and (3) were found in the pretest to be the most discriminating variables. As well, not all assessment variables could be chosen because of the BMD07M program limitation of 80 variables. The same 74 variables were used for factor analysis of the assessment variables.

Empirical Validity: "Empirical validity refers to the relation between test scores (item responses) and a criterion, the latter being an independent and direct measure of that which the test (item response) is designed to predict" (Ebel, 1973, p. 437). In this respect, one's expertise is considered to be the criterion on which one makes judgements. If the agreement between expert and assessor on classification items is high, the instrument can be considered to contain the items which, without any other knowledge of the subject, provide enough information for precise classification decisions.

In an effort to define the degree of empirical validity, an independent external expert who had been a member of the Federal Working Party classified a random sample of 100 patients, in order to identify whether or not the item responses from the assessment component of the instrument contained adequate information on which to base decisions regarding the Type of Care required, the site best suited to the needs, and program required if the patient is in the home or lodge environment.

The above random sample was again chosen by use of Neyman's Allocation Formula. For a discussion of the method, the reader is asked to refer back to the section on Reliability. One change must be noted. Because this sample was chosen following the survey, there was no need to stratify by beds. Rather, the stratification was based on the number of patients assessed in each institution and on the waiting list. Again, the standard deviation of the variable STAY was used as a proxy for Types of Care. Table 3.3 identifies the sample size from each stratum. The allocated sample, as above, was chosen by use of a table of random numbers. Information about the assessment component of the instrument for each patient selected was given to the expert, and she did a classification of each patient based entirely on that information.

Statistics including chi square and its degrees of freedom, contingency coefficients, and percentage agreement were calculated in the manner explained in previous sections.

A three way comparison of the classification by the assessor, the expert and the Bayesian Classification program was also done, which shows the extent of total agreement, the percentage of cases where one method disagrees when the other two agree, and the extent of total disagreement.

TABLE 3.3

STRATIFICATION OF PATIENTS BY LOCATION

$N = 490$

	Population Size N_h	St. Dev. S_{yh}	Cost (Time) C_h	Formula $N_h . S_{yh} / \sqrt{C_h}$	Sample Size N_h	Allocated Sample
General Hospital	161	1.182	5 min	85.10	37.14	37
Auxiliary Hospital	86	2.054	10 min	55.86	24.37	24
Riverview Nursing Home	128	1.318	10 min	49.18	21.46	21
Sunnyside Nursing Home	98	1.137	10 min	35.23	15.37	15
Waiting List	15	1.373	30 min	3.76	1.64	3
TOTAL	488			229.12	100	100

Missing Observations = 2

SUMMARY

The methodology of the study has been discussed in relation to the development of the instrument, the pretest, revision of the instrument and development of the User's Manual, the clinical analytical survey, as well as the methods used to analyze the data to determine the degree of reliability and validity of the instrument items. The latter methods are summarized in tabular form to provide clarity for the reader:-

TABLE 3.4

SUMMARY OF METHODS USED TO TEST FOR RELIABILITY AND VALIDITY OF INSTRUMENT ITEMS

	ASSESSMENT ITEMS	CLASSIFICATION ITEMS
RELIABILITY:	Inter-rater item reliabilities by chi square, contingency, coefficient, phi, Cramer's V and Kendall's Rank Correlation Tau. % agreement.	Inter-rater item reliabilities by chi square, contingency coefficient, phi, Cramer's V and Kendall's Rank Correlation Tau. % agreement
VALIDITY:		
- Face	Subjective judgement of health personnel who are users.	Approval of Federal W.P.R. by provincial authorities and community users.
- Content	Content analysis related to Federal W.P.R. patient characteristics. Comparison with instruments developed for similar purposes.	Content analysis related to Federal W.P.R. Types, Sites and Programs. Provincial Systems Densen research plus extensive literature review.
- Construct	Factor Analysis	Factor Analysis
- Concurrent	1. Concurrent Item Validities: Chi square, Contingency Coefficient, Cramer's V, Kendall's Rank Correlation Tau, in relation to Types of Care. 2. Overall Concurrent Validity: Descriminant Analysis	Concurrent Validities: Chi square, Contingency Coefficient, Cramer's V, Kendall's Rank Correlation Tau, in relation to Types of Care
-Empirical	--	Comparison of assessors' and expert classification by chi square, contingency coefficients, % agreement
PREDICTIVE	Not Attempted	Not Attempted

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The analysis of the data is presented in the following order: (1) a descriptive analysis of the characteristics of the population under study, (2) identification and discussion of reliability studies undertaken, and (3) presentation of the findings of validity studies.

DESCRIPTIVE ANALYSIS OF THE POPULATION CHARACTERISTICS

As discussed previously, the study population included patients in four health care institutions and individuals awaiting placement in the long-term care facilities. The total size of the study population was 490. Table 4.1 identifies the location of the patients on the study day. Of these 490 individuals, 476 were institutionalized and 14 were at home or in the Senior Citizens' Lodge.

TABLE 4.1

LOCATION OF STUDY POPULATION

	Frequency	%
Medicine Hat General Hospital	161	32.9
Dr. Dan McCharles Auxiliary Hospital	87	17.8
Riverview Nursing Home	128	26.1
Sunnyside Nursing Home	99	20.2
Senior Citizens' Lodge	6	1.2
Home	8	1.6
Bow Island General Hospital	1	0.2
TOTAL	490	100.0

The length of stay of inpatients, shown in Table 4.2, does not indicate the total duration of stay, rather, the time the patients had been institutionalized up to the study day. It is of interest that 48.9% of the patients had been in their current placement for six months or more.

TABLE 4.2

LENGTH OF STAY OF INPATIENTS
UP TO STUDY DAY

	Frequency	%
2 weeks or less	129	27.6
2 weeks to one month	46	9.8
1 month to 3 months	37	7.9
3 months to 6 months	27	5.8
6 months to one year	45	9.6
one year to 3 years	85	18.2
3 years to 6 years	76	16.2
6 years or more	23	4.9
TOTAL	465	100.0

Missing Observations = 11

The location prior to the current admission, shown in Table 4.3, provides information regarding the admitting patterns within the study population. The largest percentage of patients has been admitted from their urban homes with the second largest group coming from the acute care hospital. The differentiation of rural and urban home is made to indicate the potential impact of community health services in the city or the rural areas if the patients were not institutionalized.

TABLE 4.3

LOCATION PRIOR TO THE CURRENT ADMISSION

	Frequency	%
Home - Rural	42	8.9
Home - Urban	164	34.9
Acute Hospital	133	28.3
Auxiliary Hospital	77	16.4
Nursing Home	12	2.6
Senior Citizens' Lodge	35	7.4
Psychiatric Facility	5	1.1
Other	2	0.4
TOTAL	470	100.0
Missing Observations = 20		

A total of 61 patients were awaiting placement in an alternate facility on the study day. Table 4.4 summarizes the length of time patients had been on the waiting list. Nearly 25% had been waiting five months or more for alternate placement, reflecting blockages in the system which may prevent optimum use of facilities and services and cause overservicing or underservicing of patients. Table 4.5 identifies reasons which, singly or in combination, may be found for less than the best placement. The most common deterrent to optimum placement was the inability or unwillingness of the family to care for the patient in the home environment. This may reflect changes in societal values, housing conditions, or, on the other hand, it may point to the need for development of community services to assist patients and their families to cope with the assistance of home care programs.

TABLE 4.4

TIME ON WAITING LIST FOR ALTERNATE PLACEMENT

	Frequency	%
1 month or less	13	22.8
1 month to 3 months	22	38.6
3 months to 5 months	8	14.0
5 months or more	14	24.6
TOTAL	57	100.0

Missing Observations = 4

TABLE 4.5

DETERRENTS TO PLACEMENT BASED ON NEED [a]

	Frequency	%
None	326	66.5
No Bed	54	11.0
Financial	2	4.1
No Home	42	8.6
Family Unable or Unwilling	78	15.9
Reject Placement	9	1.8

[a] More than one Deterrent may be noted for a patient.

Demographic data are shown in Tables 4.6, 4.7, and 4.8. Over three-quarters of the population (76.2%) are 60 years of age or older, approximately three-fifths (60.2%) are female and a high percentage are widowed (43.2%).

TABLE 4.6

AGE OF STUDY POPULATION

	Frequency	%
0 - 29 years	26	5.4
30-44 years	27	5.6
45-59 years	62	12.8
60-69 years	60	12.4
70-79 years	111	23.0
80-89 years	143	29.6
90 years or more	54	11.2
TOTAL	483	100.0
Missing Observations = 7		

TABLE 4.7

SEX OF STUDY POPULATION

	Frequency	%
Male	195	39.8
Female	295	60.2
TOTAL	490	100.0

TABLE 4.8

MARITAL STATUS OF STUDY POPULATION

	Frequency	%
Married	180	36.9
Single	75	15.4
Widowed	211	43.2
Divorced or Separated	22	4.5
TOTAL	488	100.0
Missing Observations = 2		

The amount of psycho-social support provided to patients is shown in Table 4.9. Only 56.3% of the patients studied were perceived to have adequate support. The sources of support are identified in Table 4.10, where it can be seen that the major component of support was provided by the family.

TABLE 4.9

AMOUNT OF PSYCHO-SOCIAL SUPPORT

	Frequency	%
Unknown	9	1.8
None	31	6.3
Limited	174	35.5
Adequate	276	56.3
TOTAL	490	100.0

TABLE 4.10

SOURCE OF PSYCHO-SOCIAL SUPPORT [a]

	Frequency	%
Spouse	150	30.6
Family	335	68.4
Clergy	31	6.3
Friend	60	12.2
Other	12	2.4
TOTAL	588	100.0

[a] More than one source may be available to one patient

The amount of general supervision required to enable the patient to function physically, psychologically and socially in his environment is identified in Table 4.11. This variable is an important factor in the placement of the individual and the kind of programs required to meet his needs. Fifty percent of this population required a moderate amount of supervision, that is, supervision by a professional nurse on a part-time basis either in the home with visiting nurses or in an institution such as a nursing home.

TABLE 4.11

DEPENDENCY OF THE PATIENT ON SUPERVISION

	Frequency	%
None	36	7.4
Minimal	110	22.5
Moderate	247	50.5
High	96	19.6
TOTAL	489	100.0

Missing Observations = 1

Factors related to the medical status profile of the patients are identified in Tables 4.12 to 4.15. Because the study population was in the total spectrum of health care institutions, 160 patients (32.6%) had acute diagnoses, 11 patients (2.2%) were not yet diagnosed and 451 patients (92%) had one or more chronic conditions. Table 4.12 shows the chronic conditions identified in the population. Neurological disorders which include, among other conditions, congenital defects, mental retardation and chronic brain syndrome, constituted the highest frequency (45.9%). Arteriosclerosis was included in "other", which accounts for the high frequency in that category. These findings are consistent with studies reported in the literature.

The stability of the patient's clinical condition is an important indicator in relation to classification into Types of Care. The Federal W.P.R. definitions stress this item as one of the prime discriminators between Types. The characteristics of the study population are identified in Table 4.13. If no fluctuation or change was expected in the near future, the condition was considered to be stable. Because a large proportion of the population consisted of long-term care patients, it is not surprising to find that 80% were considered stable.

The severity of the clinical condition as well as a prediction of patient outcome in three months and one year are important indicators for placement and programs of care. Information regarding these variables is found in Table 4.14. The number of patients with moderate and debilitating severity remains fairly constant while minimal and life-threatening severity tends to increase over time.

TABLE 4.12

CHRONIC CONDITIONS [a]

	Frequency	%
Alcoholism	13	2.7
Anemia	16	3.3
Angina	10	2.0
Arthritis	120	24.5
Cardiac	12	2.4
Congestive Heart Failure	82	16.7
Diabetic	74	15.1
Drug Abuse	3	0.6
Hypertension	52	10.6
Malignancy	43	8.8
Mental Illness	66	13.5
Neurological Disorders	225	45.9
Respiratory Disease	36	7.3
Cerebro Vascular Accident	63	12.9
Fractures	56	11.4
Other Chronic Conditions	126	25.7
TOTAL	997	

[a] A patient may have more than one chronic condition

TABLE 4.13

STABILITY OF CONDITION

	Frequency	%
Stable	396	80.8
Unstable	94	19.2
TOTAL	490	100.0

TABLE 4.14

SEVERITY OF CONDITION

	Present		3 Months		1 Year	
	Frequency	%	Frequency	%	Frequency	%
Minimal	41	8.4	91	18.6	100	20.4
Moderate	246	50.2	227	46.3	196	40.0
Debilitating	195	39.8	165	33.7	168	34.3
Life Threatening	8	1.6	7	1.4	26	5.3
TOTAL	490	100.0	490	100.0	490	100.0

Many health risk factors exist in the general population and, as might be expected, these risks are reflected in the study findings. Although 38% of the population exhibited none of these risks, the remainder of the population, as shown in Table 4.15, have one or more of these risk factors.

TABLE 4.15

HEALTH RISKS [a]

	Frequency	%
None	186	38.0
Obesity	74	15.1
Malnourished	36	7.3
Smoking	36	7.3
Suicidal	7	1.4
No Exercise	175	35.7
Fragile Skin	102	20.8
Other Risks	44	9.0

[a] A patient may have more than one health risk

Intensive planned rehabilitation programs, e.g., physiotherapy, occupational therapy, speech therapy, as well as intensive psychiatric or psychological therapy may be required to elevate or maintain the patient's functional status. Table 4.16 shows the assessor's perception of the patient's potential for improvement through such rehabilitation programs. Over two-thirds of the population would not benefit, however, the remaining one-third had moderate to high potential for improvement through such programs.

TABLE 4.16

POTENTIAL FOR IMPROVEMENT THROUGH CO-ORDINATED REHABILITATION PROGRAMS

	Frequency	%
None	331	67.6
Moderate	127	25.9
High	32	6.5
TOTAL	490	100.0

The assessors suggested time span to reassess each patient care program, shown in Table 4.17, identifies a general time range in which the overall care plan should be discussed and reassessed by the health care team, based on changes in the patient's condition. It becomes obvious that there is a broad range of time identified by the assessors. More analysis is necessary to relate this variable to the acuity of illness and the requirements for program-placement based on changing patient need.

TABLE 4.17

TIME SPAN TO REASSESS CARE PROGRAM

	Frequency	%
less than 1 month	149	30.4
one month to 3 months	56	11.4
3 months to 6 months	40	8.2
more than 6 months	245	50.0
TOTAL	490	100.0

The level of physical and psycho-social functioning of the study population is shown in Table 4.18. Information is provided regarding the senses: sight, hearing and speech. The functional status relating to Activities of Daily Living (ADL) is outlined in Table 4.19, while communication skills, behavior and psycho-social functioning are identified in Tables 4.20, 4.21, and 4.22. Patients with some problem or a major problem with sight (184) slightly outnumber those with hearing problems (158), while 117 have some degree of problem with speech. The ADL variables identify the large number in the population who require assistance in order to maintain basic social existence. For example, 43.7% of the population require total assistance from another person for bathing, whether in bed, shower or tub. While the frequency of problems with communication, behavior and psycho-social functioning is lower, there are major implications for care of the one-third of the population who do exhibit definite needs in this area.

TABLE 4.18

SENSES

	Sight		Hearing		Speech	
	Frequency	%	Frequency	%	Frequency	%
No Problem	306	62.4	329	67.6	373	76.1
Some Problem	165	33.7	143	29.4	74	15.1
Major Problem	19	3.9	15	3.1	43	8.8
TOTAL	490	100.0	490	100.0	490	100.0

TABLE 4.19

ACTIVITIES OF DAILY LIVING

N = 490

	No Problem		Some Problem		Major Problem		
	Freq.	%	Freq.	%	Freq.	%	Total
Bathing	107	21.8	169	34.5	214	43.7	490
Dressing	160	32.7	146	29.8	184	37.6	490
Walking	238	48.6	98	19.0	159	32.4	490
Goes Outside	119	24.3	118	24.1	253	61.6	490
Voluntary Motion	209	42.7	254	51.8	27	5.5	490
Transfer	252	52.4	196	40.0	42	8.6	490
Wheeling	296	60.4	69	14.1	125	25.5	490
Bladder Function	256	52.2	112	22.9	122	24.9	490
Bowel Function	136	27.8	316	64.5	38	7.8	490
Use of Toilet	219	44.7	187	38.2	84	17.1	490
Eating	315	64.3	108	22.0	67	13.7	490
Eating -Where	212	43.3	194	39.6	84	17.1	490
Dentition	366	74.7	93	19.0	31	6.3	490

TABLE 4.20

COMMUNICATION SKILLS

	Frequency	% of Population
Adequate Verbal Communication	348	71.0
Inadequate Verbal Communication[a]		
- Education	11	2.3
- Physical	67	13.7
- Cultural	22	4.5
- Emotional	67	13.7
- Other	19	3.9
Inadequate Non-Verbal Communication	64	13.1

[a] A patient may have more than one reason for inadequate verbal communication

TABLE 4.21

BEHAVIOR

	Frequency	%
Appropriate	325	66.3
Coma, Semi-Coma, Anaesthetized	12	2.4
Wandering	80	16.3
Abusive	58	11.8
Other	15	3.1
TOTAL	490	100.0

TABLE 4.22

SOCIAL-PSYCHOLOGICAL FUNCTIONING

N = 490

	No Problem		Some Problem		Major Problem		
	Freq.	%	Freq.	%	Freq.	%	Total
Memory	207	42.2	217	44.3	66	13.5	490
Judgement	167	34.1	173	35.3	150	30.6	490
Mood-Depressed	335	68.4	144	29.4	11	2.2	490
Mood-Anxious	333	68.0	151	30.8	6	1.2	490
Mood-Uncooperative	400	81.6	83	16.9	7	1.4	490
Social Initiative	108	22.0	230	46.9	152	31.0	490

The number of ADL and psycho-social problems that the patients exhibited are shown in Tables 4.23 and 4.24. For example, only 3.5% of the patients had no problems with ADL, while 20.8% had some problem or a major problem with 12 or 13 of the ADL variables. In relation to the psycho-social variables, 12.7% of the population had no problem and 23.3% had problems with 6 to 9 of the variables.

TABLE 4.23

NUMBER OF ADL PROBLEMS EXHIBITED BY STUDY POPULATION

	Frequency	%
None	17	3.5
1 - 2	81	16.5
3 - 5	104	21.2
6 - 9	93	19.0
10 - 11	93	19.0
12 - 13	102	20.8
TOTAL	490	100.0

TABLE 4.24

NUMBER OF PSYCHO-SOCIAL PROBLEMS EXHIBITED BY THE STUDY POPULATION

	Frequency	%
None	62	12.7
1	69	14.1
1 - 3	96	19.6
4 - 5	149	30.4
6 - 9	114	23.3
TOTAL	490	100.0

When the information from the above tables was crosstabulated to estimate the relationship of patients exhibiting both ADL and psycho-social functional disability, it was found that only 3 patients (0.6%) had no problem with either ADL or psycho-social variables, and 46 patients (9.4%) had problems with the maximum category of variables under both headings.

Table 4.25 summarizes the assessors' opinion of the services needed by the study population. These service requirements may already be components of the care being provided, or they may be services which, if provided, would assist the patient to maintain or increase his functional status to its optimal level. Oral medication, skilled treatment and diversional therapy are the services most required by this study population.

TABLE 4.25

SERVICE REQUIREMENTS

N = 490

	Frequency	%
Physiotherapy	113	23.1
Occupational Therapy	94	19.4
Speech Therapy	6	1.2
Respiratory Therapy	16	3.3
Diversional Therapy	239	48.8
Social Casework	19	3.9
Psychological Services	16	3.3
Sheltered Workshops	8	1.6
Community Services & Information	8	1.6
Oral Medications	450	91.8
Injectable Medications	77	15.7
Skilled Treatment	244	49.8
Other Services	14	2.8

The classification section of the instrument has three major components: the Type of Care required, the site where the patients' needs can best be met and the programs required for patients in the non-institutional sites.

Tables 4.26, 4.27 and 4.28 identify the population characteristics for these components respectively. Because of the nature of the population, that is, excluding all patients in the lodge and home environment as well as patients in a specialized rehabilitation facility, it can be seen that the frequency of Type 1 and Type 4 patients is relatively small. This must be considered, as discussed before, a limitation of this study. The degree of inappropriate placement, as perceived by the assessors, can also be identified when comparing the present location to the site where the patients' needs could best be met. Of particular interest is the need for placement of 253 patients in a nursing home environment, whereas the community has only 230 nursing home beds available. Of the 41 patients who could have their needs met in other than a health care institution setting, it can be seen that a variety of programs are required to meet their needs. Along with other findings, skilled medical or nursing care on an ambulatory basis would be required by 36.5% of these patients, and 22% would require the services of a homemaker.

TABLE 4.26

TYPES OF CARE OF STUDY POPULATION

	Frequency	%
Type 1	19	3.9
Type 2	245	50.3
Type 3	58	11.9
Type 4	37	7.6
Type 5	128	26.3
TOTAL	487	100.0

Missing Observations = 3

TABLE 4.27

SITE WHERE PATIENTS' NEEDS CAN BEST BE MET

N = 490

	Frequency	%
Own Home	24	4.9
Boarding Home	5	1.0
Lodge	12	2.4
Nursing Home	253	51.6
Auxiliary Hospital	66	13.5
Special Rehabilitation Hospital	1	0.2
Psychiatric Facility	3	0.6
General Acute Hospital	119	24.3
TOTAL	483	100.0

Missing Observations = 7

TABLE 4.28

PROGRAMS REQUIRED FOR NON-INSTITUTIONAL PATIENTS [a]

N = 41

	Frequency	%
Institution-Based Ambulatory Care:		
- Day/Night	5	12.2
- Geriatric Day Care	5	12.2
- Psychiatric Day/Night Care	1	2.4
- Diabetic Day Care	1	2.4
- Rehabilitation	8	19.5
- Skilled Medical/Nursing Care	15	36.5
- Surgical Day Care	0	0.0
Community-Based Programs:		
- Crisis Center	1	2.4
- Physician's Office	7	17.1
- Meals-on-Wheels	2	4.8
- Home Nursing	7	17.0
- Alcoholics Anonymous	1	2.4
- Homemakers	9	22.0
- Other Community Services	6	14.6

[a] More than one program may be required by a patient.

The population characteristics as described above point to a heterogeneous group of individuals who, because of their physical and psycho-social functioning, medical status, and/or their demographic attributes, require a variety of placements and programs in order to meet their requirements for care. This is the kind of information base which will assist in decision-making regarding individual patient care, appropriate placement in order to match the patients' needs with available resources, as well as provide information required for institutional, community and government planning. More detailed descriptive results are given in Kyle (1975).

RELIABILITY

The findings regarding the inter-rater reliability study are summarized in Table 4.29. Several measures of agreement are reported. The agreement on each item as tested by chi square is significant at the $\alpha = .05$ level on each variable indicated by an asterisk. In these instances, there is significant agreement between the two independent assessors in assessing and classifying the patients under study. This is a test of the null hypothesis of no agreement, but rejection or significance does not necessarily indicate acceptable reliability.

The contingency coefficient C is a measure of the extent of the agreement between the assessors. A limitation of the contingency coefficient is that even if there is perfect agreement, that is, perfect correlation, the contingency coefficient does not equal unity, or 1. This is obvious on the variable WAIT, where there is perfect agreement, however, the contingency coefficient is only .866.

Application of the phi statistic provides a correction for the fact that the value of chi square is directly proportional to that of N by adjusting the χ^2 value. For the 2X2 table, the values range from 0 when there is no relationship, to 1 when the relationship between the two variables is perfect.

There is no upper limit to phi if calculated for a table that is not 2x2, therefore, Cramer's V is used to adjust for the number of rows or columns which exceed 2. Its values range from 0 to 1, regardless of the size of the table.

The Kendall Rank Correlation Coefficient is reported on the data that was considered to be at least ordinal, so that individuals under study could be ranked in an ordered series. For testing the null hypothesis of zero agreement between the two assessors, all items indicated by an asterisk are significant at the $\alpha = .05$ level. In other words, there is significant agreement between the assessors on the variables tested by Kendall's Tau for these items.

The percentage of agreement between each pair of independent assessors is indicated in the last column, which ranges from a high of 100% agreement to a low of 67.3%.

TABLE 4.29

INTER-RATER ITEM RELIABILITY STUDY

MEASUREMENT OF RELATIONSHIP OF RESPONSES ON EACH ITEM BY TWO INDEPENDENT ASSESSORS

Item	χ^2	d.f.	Contingency coefficient	Cramer's V	Phi	Kendall's Tau	% Agreement
Psycho-Social Support	83.29*	4	.677	.651		.669*	81.6
Source - None	21.99*	1	.427		.473		95.9
" - Spouse	60.89*	1	.619		.788		92.8
" - Family	22.62*	1	.433		.480		76.5
" - Clergy	23.36*	1	.438		.488		93.8
" - Friend	23.27*	1	.438		.487		89.7
" - Other	3.38	1	.182		.185		94.8
Marital Status	202.54*	9	.821	.830			91.8
Dependency	102.78*	9	.715	.591		.583*	71.4
Stay	537.02*	49	.922	.903		.933*	88.7
Wait	44.99*	9	.866	1.00		1.00 *	100.0
Age	452.49*	42	.909	.891		.832*	90.5
Deterrents - None	64.04*	1	.628		.808		92.8
" - No Bed	79.84*	1	.670		.902		98.9
" - Financial	-	-	-	-	-		100.0
" - No Home	9.04*	1	.290		.303		94.8
" - Family	67.34*	1	.638		.828		96.9
" - Reject	16.66*	1	.381		.412		96.9
Diagnosis -							
Acute: - None	64.79*	1	.631		.813		91.8
- Unknown	2.28	1	.150		.152		95.9
Chronic Condition:							
- None	23.14*	1	.437		.485		92.8
- Alcohol	22.97*	1	.435		.484		97.9
- Anemia	16.66*	1	.381		.412		96.9
- Angina	-	-	-		-		98.9
- Arthritis	40.15*	1	.539		.640		90.8
- Cardiac	7.50*	1	.266		.276		97.9
- Cong. H. F.	35.38*	1	.515		.600		91.8
- Diabetic	55.56*	1	.601		.752		93.8
- Drug Abuse	-	-	-	-	-		100.0
- Hypertension	31.67*	1	.494		.568		94.8
- Malignancy	51.03*	1	.585		.721		95.9
- Mental Illness	26.81*	1	.463		.523		86.7
- Neuro Disorders	35.15*	1	.513		.598		83.6

continued.....................

Item	χ^2	d.f.	Contingency coefficient	Cramer's V	Phi	Kendall's Tau	% Agreement
Chronic Condition:							
- Resp. Disease	52.75*	1	.591		.733		97.9
- C.V.A.	26.68*	1	.462		.521		87.7
- Fracture	56.76*	1	.605		.761		95.9
- Other	28.63*	1	.475		.540		82.6
Stability	43.74*	1	.555		.668		89.7
Severity - Present	138.45*	9	.765	.686		.529*	68.3
- 3 mos.	132.49*	9	.758	.671		.610*	73.4
- 1 yr.	100.00*	9	.710	.583		.659*	67.3
Health Risk:							
- None	21.97*	1	.428		.473		75.5
- Obesity	56.50*	1	.604		.759		93.8
- Malnourished	.141	1	.037		.037		88.7
- Smoking	31.38*	1	.492		.565		95.9
- Suicidal	23.99*	1	.443		.494		97.9
- No Exercise	28.54*	1	.474		.539		79.5
- Fragile Skin	35.76*	1	.517		.604		88.7
- Other	6.90*	1	.256		.265		89.7
Potential Rehab.	105.16*	4	.719	.732		.709*	86.7
Reassess Care	126.23*	9	.750	.655		.850*	79.5
Sight	74.91*	4	.658	.618		.733*	84.6
Hearing	97.11*	4	.705	.704		.733*	84.6
Speech	92.52*	4	.696	.687		.739*	78.5
Dressing	88.01*	4	.687	.670		.720*	76.5
Walking	85.71*	4	.683	.661		.677*	78.5
Go Outside	58.69*	4	.612	.547		.573*	71.4
Voluntary Motion	78.47*	4	.666	.632		.632*	80.6
Transfer	76.25*	4	.661	.623		.703*	80.6
Wheeling	108.41*	4	.724	.743		.705*	84.6
Bladder	97.64*	4	.706	.705		.810*	84.6
Bowel	81.07*	4	.672	.643		.710*	82.6
Toilet	106.15*	4	.721	.735		.803*	81.6
Eating	96.48*	4	.704	.702		.717*	80.6
Eats - Where	115.37*	4	.735	.767		.807*	84.6
Dentition	90.57*	4	.693	.679		.648*	81.6
Special Diet	45.06*	4	.561	.678			86.7
Verbal Comm-Adequate	29.47*	1	.480		.548		83.6
VCI - Education	-	-	-	-			98.9
- Physical	37.00*	1	.523		.614		93.8
- Cultural	-	-	-	-	-		95.9
- Emotional	14.53*	1	.359		.385		87.7
- Other	1.66	1	.129		.130		94.8

continued..................

Item	χ^2	d.f.	Contingency coefficient	Cramer's V	Phi	Kendall's Tau	Agreement
Non-Verbal Comm.	4.21*	1	.202		.207		87.7
Behavior	42.30*	12	.549	.379			72.4
Memory	102.07*	4	.714	.721		.808*	84.6
Judgement	90.29*	4	.692	.678		.759*	78.5
Mood - Depressed	47.01*	4	.569	.489		.509*	74.4
" - Anxious	16.37*	2	.378	.408		.404*	75.5
" - Uncooperative	33.82*	4	.506	.415		.537*	83.6
Initiative	69.92*	4	.645	.597		.653*	73.4
Service Requirements:							
- Physiotherapy	40.10*	1	.538		.639		85.7
- Occ. Therapy	37.86*	1	.527		.621		86.7
- Speech Therapy	2. 28	1	.150		.152		95.9
- Respiratory Therapy	-	-	-	-	-		100.0
- Diversional Therapy	48.04*	1	.573		.700		85.7
- Social Case Work	9.04*	1	.290		.303		94.8
- Psychiatric Service	1.93	1	.138		.140		95.9
- Sheltered W.S.	3.31	1	.180		.183		96.9
- Community S & I	2.28	1	.150		.152		95.9
- Oral Medications	8.89*	1	.288		.301		88.7
- Inj. Medications	58.04*	1	.609		.769		93.8
- Skilled Treatment	36.56*	1	.521		.610		81.6
- Other	11.62*	1	.325		.344		96.9
Type of Care	170.01*	16	.797	.662		.856*	80.4
Site	172.16*	12	.798	.765			86.7
Programs:							
- None	14.17*	1	.355		.380		94.8
- Day/Night	23.99*	1	.443		.494		100.0
- Geriatric D.C.	11.62*	1	.325		.344		96.9
- Psych. D.C.	-	-	-	-	-		100.0
- Diabetic D.C.	11.62*	1	.325		.344		98.9
- Rehabilitation	23.99*	1	.443		.494		97.9
- Skilled Med/Nurse	26.22*	1	.459		.517		97.9
- Surgical Day	-	-	-	-	-		100.0
- Crisis Centre	-	-	-	-	-		100.0
- Physician's Office	23.99*	1	.443		.494		97.9
- Meals on Wheels	-	-	-	-	-		100.0
- Home Nursing	7.50*	1	.266		.276		95.9
- A.A. Program	-	-	-	-	-		100.0
- Homemaker	5.44*	1	.229		.235		96.9
- Other Comm. Services	54.36*	1	.597		.744		100.0
- Other	-	-	-	-	-		100.0

continued.....................

Item	χ^2	d.f.	Contingency coefficient	Cramer's V	Phi	Kendall's Tau	Agreement
Input:							
- Client	48.22*	1	.574		.701		89.7
- Physician	55.94*	1	.602		.755		89.7
- Nurse	.59	1	.677		.078		92.8
- Social Work	28.37*	1	.473		.538		96.9
- Family	15.69*	1	.371		.400		89.7
Position of Assessor	128.38	12	.754	.664			

* The relationship is significant at the $\alpha = .05$ level.

Another measure is the percentage of agreement within categories of the variables, but this measure is too detailed to report for most variables. The major variable of interest is Types of Care. Table 4.30 shows the findings on this variable. There were no patients assessed by both assessors for Type 1, there was 84% agreement for Type 2, 62% agreement for Type 3, 78.5% agreement for Type 4, and the assessors agreed in 92% of the cases for Type 5. Caution in interpretation of the findings must be exercised as, in some variables, there is high disagreement on certain categories. Overall, the mean percentage agreement on assessment variables was 88%, and 96% on the classification variables. It is the investigator's opinion that this high level of agreement is most likely an indication of in-depth knowledge of the patients' functional status by the assessors who were those providing direct care, as well as their reliable application of the operational definitions provided in the User's Manual.

TABLE 4.30

INTER-RATER RELIABILITY TEST
OF CLASSIFICATION BY TYPES OF CARE

MEDICINE HAT ASSESSOR 1	MEDICINE HAT ASSESSOR 2					
	Type 1	Type 2	Type 3	Type 4	Type 5	Total
Type 1	0	1	0	0	0	1
Type 2	3	35	5	0	1	44
Type 3	0	3	9	1	0	13
Type 4	0	0	2	11	1	14
Type 5	0	0	0	2	23	25
TOTAL	3	39	16	14	25	97
% Agreement	100.0%	84.3%	62.1%	78.6%	92%	80.4%

$X^2 = 170.008$ d.f. = 16
Contingency Coefficient = .797

VALIDITY STUDIES

FACE VALIDITY

Three major techniques were used to identify the presence of face validity, that is, determining whether or not the instrument items "appeared on the face" to bear a common-sense relationship to the measurement objectives of the study. Firstly, potential users including administrators, health care planners, physicians, social workers and nurses were involved in the instrument construction and testing. Secondly, informal feedback from users indicated acceptance of the instrument because it appeared to be practical, pertinent and related to the purpose of the classification study, and thirdly, use of the instrument is being continued in Medicine Hat and it is in use in another Alberta community.

CONTENT VALIDITY

Content validity was established by showing that the instrument items constitute a sample of a universe of items which test for patient characteristics defined for Types of Care in the Federal W.P.R. Table 4.31 identifies the instrument items which are related to each patient characteristic. Through an intensive review of the literature relating to patient assessment and classification, a large universe of variables was identified, many of which were included in this study. (c.f. Bayne, 1973; Jones, 1973; Knox, 1974). As noted in the previous chapter, many instruments are available to test the functional status of patients in one or another spectrum of the health care delivery system, however, no instrument was identified which covered the total spectrum of patient needs from acute care to health services in the home environment. Therefore, content, in addition to that appearing in the literature, had to be generated to provide for the identification of comprehensive multi-dimensional needs within the study population. The assistance of experts in the field, including a member of the Federal Working Party, assisted in the development of items for the instrument in general and, in particular, in the development of items to meet the above content voids.

TABLE 4.31

CONTENT VALIDATION BY RELATING PATIENT CHARACTERISTICS FROM FEDERAL W.P.R. TO ITEMS ON STUDY INSTRUMENT

Patient Characteristics	Items on Instrument
TYPE 1	
1. The medical condition is known to be stabilized or under clinical control.	13, 14,15
2. The person has:	
(a) physical and/or mental frailty	10, Section C & D
or (b) congenital handicap	13-B,Section C & D
or (c) disability due to previous illness or injury	13-B, Section C & D
3. The person should be independently ambulatory (with or without mechanical aids) or independently mobile in a wheelchair	21, 23, 24, 25
4. The person is limited mentally or physically in his ability to care for himself independently and as a consequence has major social needs.	3, Section C & D
5. The care required is primarily supervision and assistance with activities of daily living.	10, Section C
6. The treatment, if any, is standardized and includes only maintenance medication and preventive services.	16, 42, Section E
TYPE 2	
1. Diagnosis has been established	13
2. The patient has a chronic illness which is not in an acute phase or has a relatively stabilized functional disorder.	13-B
3. As demonstrated by prefious assessment and response to treatment there is little or no rehabilitation potential.	17
4. The disease process is relatively stabilized.	14
5. There is relatively little need for diagnostic and therapeutic services.	Section E
6. The individual's need is primarily for care on a continuing 24-hour basis with professional nursing supervision and access to physical medicine services.	10, Section C, D, & E
7. A prolonged period of care is anticipated, i.e., the patient's condition is expected to remain significantly unchanged in the near future.	14, 15,18.
TYPE 3	
To be classified as requiring Type III Care the following conditions must pertain:	
1. The diagnosis is established	13
2. The patient has a chronic illness	13-B
3. The acute phase of the illness has passed or is subsiding	14,15
And one or more of the following must be exhibited:	
4. The patient has rehabilitation potential which can best be realized in a slow-paced program	17
5. The disease process requires medical management to achieve clinical control	14, Section E
6. Evidence of significant change presently occurring in the patient's condition, e.g., improvement, relapse, deterioration or progression of disease	15
7. A need for nursing care with professional nursing supervision of a continuing 24-hour basis.	10
TYPE 4	
1. The diagnosis has been established	13
2. The acute phase of illness is past or subsiding.	3, 14
3. The patient has a demonstrated functional impediment or impairment.	Section C & D
4. The need is related to a functional deficit requiring primarily specialized assessment, treatment, adaptation & training.	17, Section E
TYPE 5	
To be classified as Type V. Care one of the following conditions is essential:	
1. The patient has an acute illness or injury.	13-A
2. The patient requires investigation and examination for an unknown or potentially serious condition.	13-A
3. The patient requires life-saving measures.	14, 15, Section E

CONSTRUCT VALIDITY

The instrument was tested for content validity through the application of factor analysis to the study data. Factor analysis enables us to see whether some underlying pattern of relationships exists so that the data can be rearranged or reduced to a smaller set of underlying fundamental factors or constructs that may account for the interrelationships in the data. Two separate factor analyses were carried out. The first was on 74 assessment variables, chosen because of complete data, adequate sample size in each category, and a significant relationship to Types of Care as shown by the item validity measures in the next section. The Service Requirements were excluded from the assessment analysis because of the computer program restriction of 80 variables.

The second factor analysis was undertaken on 28 variables related to classification, i.e., Types of Care, Sites and Community Programs, as well as the Service Requirements which had been excluded on the first analysis. In both cases, the variables were factored by the principal axis method using 1's on the diagonal of the correlation matrix; a varimax transformation was then applied, using 6 factors. The reason 6 factors was chosen was because an acceptable percentage of variance was accounted for by this number of factors. As well, from previous experience in the pretest, there appeared to be a classification factor related to each of the five Types of Care, plus an additional one which appeared to be associated with acute psychiatric needs. Fewer factors would not have accounted for an adequate proportion of the total variance, and it was decided that if more factors were used, there was a danger of their becoming unique and therefore contrary to the purpose of the analysis.

Table 4.32 reports the eigenvalues associated with each of the assessment factors, which is proportional to the variance accounted for by that factor. Just under 40% of the variance is accounted for by the first 6 factors derived from 74 variables drawn from the assessment component of the instrument.

TABLE 4.32

FACTOR ANALYSIS OF ASSESSMENT VARIABLES

Factor	Eigenvalue	% of Variance	Cumulative %
1	12.837	17.3	17.3
2	5.942	8.0	25.4
3	3.158	4.3	29.6
4	2.671	3.6	33.3
5	2.375	3.2	36.5
6	2.019	2.7	39.2
TOTAL	29.002/74 = 3.92	39.2	

The varimax factor pattern for the 6 assessment factors is summarized in Table 4.33. Also included are all item loadings of .30 or greater as well as those variables not loaded above .30 on any factor. Assessment Factor 1 reflects what can be regarded as usual self-care activities related to Activities of Daily Living. Severity of impairment in 3 months and 1 year have approximately equal loadings, reflecting the lack of change expected over the identified time frame. Factor 2, identified as Long Term Chronic Deterioration, points to the elderly, long stay, clinically stable patient with minimum potential for rehabilitation, who has one or more chronic conditions including mental deterioration which influence his status related to ADL as well as his memory and judgement. Factor 3 relates to Chronic Mental Illness which includes patients' problems with verbal and nonverbal communication, some physical manifestations, and psychological as well as social deviance. Factor 4 involves evidence of Behavioral Deterioration with Lack of Social Support. Persons who are deemed to be uncooperative and/or abusive, have problems with sight and hearing, have some health risks and not only have no home to go to, but also lack psycho-social support, would show high scores on this factor. They are likely irritating to those around them, which would make care difficult. Factor 5 is related to Acute Psychiatric needs of patients. Depression, anxiety and risk of suicide have a high loading on this factor. Severity of impairment has similar loadings from the present time frame to one year, which indicates that the patient's condition may be long term. It is interesting that this factor is present although patients with acute psychiatric needs were not given a specific category in the Federal W.P.R. On the basis of this finding there is an indication of limitations within the classification system.

Patients who are moderately independent but require some support show high loadings on Factor 6. The fact that the source of support loads the highest on this factor indicates the importance of psycho-social assistance to individuals who may have some physical deficit combined with a chronic condition necessitating a special diet.

TABLE 4.33

VARIMAX FACTOR PATTERN OF ASSESSMENT VARIABLES

	Factor Loading
FACTOR 1 Self Care-Dependent	
Walking	.87
Talking	.86
Transfer	.85
Wheeling	.76
Eating	.73
Voluntary Motion	.71
Bladder	.70
Dressing	.70
Severity Present	.69
Goes Outside	.66
Bathing	.59
Severity-3 mos.	.55
Severity-1 yr.	.52
Eats - Where	.49
Bowel Function	.48
Fragile Skin	.46
Dentition	.43
Initiative	.36
No Exercise	.34
FACTOR 2 - Long Term Chronic Deterioration	
Reassess Care	.86
Stay	.81
No Acute Diagnosis	.80
Age	.62
Neurological Disorders	.60
Bathing	.57
Potential for Rehab.	-.57
Stability	-.56
Eats - Where	-.55
Severity-1 yr.	-.53
Judgement	.53
Memory	.46
Spouse	.45
No Chronic Diagnosis	-.45
Severity-3 mos.	.45
Dressing	.41
Bowel	.40
Chronic Condition:	
Cong. Heart Failure	.31
Arthritis	.30
FACTOR 3 - Chronic Mental Illness	
Verbal Comm Adequate	-.74
Non-Verbal Comm.	.74
Speech	.64
Memory	.62
Wander	.59
Judgement	.59
Social Initiative	.49
Eating	.41
Dentition	.36
Chronic Condition:	
Mental Illness	.32
Bladder Function	.32
Dressing	.31
Malnourished	.30

	Factor Loading
FACTOR 4 - Behavioral Deterioration with Lack of Social Support	
No Deterrent to placement	-.72
Support	-.60
Sight	.55
Abusive	.51
Deterrent to Placement:	
No Home	.48
Uncooperative	.48
No Exercise	.47
Hearing	.44
No Health Risks	-.39
FACTOR 5 - Acute Psychiatric	
Depression	.56
Risk-Suicidal	.46
Anxious	.44
No Health Risk	-.41
Severity- 3 mos.	.352
Support - Friend	.35
Severity - 1 yr,	.32
Severity - present	.31
Stability	.31
FACTOR 6 - Independent with Support	
Source of Support - Family	.60
No Source of Support	-.52
Special Diet	-.43
Chronic Condition:	
Diabetis	.35
Sight	.32
Variables not Loaded ($< .3$) on any Factor	
Deterrent to Placement-No Bed	
Deterrent to Placement-Reject	
Acute Diagnosis-Unknown	
Chronic Conditions:	
-Alcoholism	
-Anemia	
-Angina	
-Cardiac	
-Malignancy	
-Respiratory Disease	
-C.V.A.	
-Fractures	
Health Risks:	
-Obesity	
-Smoking	

Factor analysis undertaken on the 28 classification variables and service requirements, as shown on Table 4.34, evidences eigenvalues for the 6 factors which account for nearly 50% of the total variance of the 28 variables used.

TABLE 4.34

FACTOR ANALYSIS OF CLASSIFICATION VARIABLES

Factor	Eigenvalue	% of Variance	Cumulative %
1	4.098	14.6	14.6
2	2.803	10.0	24.6
3	2.731	9.8	34.4
4	1.595	5.7	40.1
5	1.416	5.1	45.2
6	1.299	4.6	49.8
TOTAL	13.94 /28 = 4.98	49.8	

The varimax factor pattern for the classification variables is summarized in Table 4.35. Factor loadings above .30 are indicated as well as the variables which did not load above .30 on any factor. Classification Factor 1 is shown to be a large bipolar Type 5 vs. Type 2 factor. That is, persons with high scores on this factor are likely to be classified as Type 5; those with low factor scores are likely to be Type 2. The interpretation of this result is that Type 5 and Type 2 are opposites, appearing on the same factor. Factor 2 appears to be a combination of Types 3 and 4, indicating that these types are difficult to distinguish from one another. It is interesting to note that Type 2 appears on this factor with a negative loading, pointing toward its additional bipolar relationship with Types 3 and 4 as well as Type 5. Physiotherapy and occupational therapy appear to be related to both Type 3 and Type 4, so we could hypothesize that this relationship would include the long-term maintenance aspect of care in Type 3, as well as the coordinated intensive short term rehabilitation included in Type 4.

Factor 3 is related to Type 1 care, which could be provided in the home environment. No programs are identified, however visits to the physician's office may be required. The low loading on Nursing Home indicates the lack of need for institutionalization of these patients.

Factor 4 appears to be an Acute Psychiatric construct. Patients loading on this factor would require placement in a psychiatric facility with programs and services including social casework, psychiatric services and skilled nursing care. As discussed previously, no separate category exists within the Federal W.P.R. classification to include these patients.

Factor 5 is a Rehabilitation factor, however Type 4 does not load on it. The inclusion of Community Services and Information and Physician's Offices would tend to make one think that this is an ambulatory care construct.

Factor 6 would seem to be a Home Care construct with high loadings on home nursing and homemaker services. No Types of Care load on this latter factor, which might indicate that home care is not specifically related to any one Type of Care.

TABLE 4.35

VARIMAX FACTOR PATTERN OF CLASSIFICATION VARIABLES

	factor loadings
FACTOR 1 - Positive-Type 5 Negative- Type 2	
Type 5	.91
Acute Care	.89
Nursing Home	-.75
Skilled Treatment	.66
Diversional Therapy	-.47
Injectable Medications	.46
FACTOR 2 - Types 3/4	
Auxiliary Hospital	.88
Physiotherapy	.65
Type 4	.65
Type 3	.54
Type 2	-.50
Occupational Therapy	.46
Nursing Home	-.43
FACTOR 3 - Type 1	
Home	.84
Type 1	.76
Physician's Office	.41
Programs - None	.33
Nursing Home	-.32
FACTOR 4 - Acute Psychiatric	
Social Casework	.75
Psychiatric Services	.68
Psychiatric Facility	.49
Skilled Nursing Care	.36
FACTOR 5 - Rehabilitation-Ambulatory Care	
Community Services and Information	.69
Special Rehab. Facility	.64
Oral Medications	-.55
Occupational Therapy	.64
Physician's Office	.31
FACTOR 6 - Home Care	
Home Nursing	.80
Homemaker	.77
Programs - None	-.30
Variables Not Loaded (< .3) On Any Factor	
Respiratory Therapy	
Sheltered Workshop	

CONCURRENT VALIDITY

Assessment and classification of the patients was carried out at the same time, therefore the criteria (Types of Care) and the predictors (assessment variables) served to indicate the present status of the patients. The higher the degree of relationship between the assessment and the Types of Care, the better the concurrent validity.

Concurrent validity was investigated by examining the relationship of each item to Types of Care (item validities), and also relating the entire set of assessment variables to the Types of Care groups through the use of discriminant function and Bayesian Classification. Table 4.36 summarizes the item validities from crosstabulation of each assessment variable with Types of Care, resulting in chi square with related degrees of freedom, the contingency coefficient and the Cramer's V, and Kendall's Tau for ordinal variables. The variables with a significant relationship to Types of Care at the $\alpha = .05$ level are indicated on the table. If the chi square is significant, this also means that the contingency coefficient, or degree of relationship, is also significant. Cramer's V is used to make the correction for the fact that the chi square is directly proportional to that of N by adjusting the χ^2. The values range from 0 to 1. Also included in the table are the Kendall rank correlation coefficients between each ordinal variable and the Types of Care. Again, those which are correlated significantly at the $\alpha = .05$ level are indicated in the table.

Overall, the majority of assessment variables have a significant ($\alpha = .05$) relationship with Types of Care when tested by chi square, contingency coefficient and Kendall's Tau.

TABLE 4.36

ITEM VALIDATION
MEASUREMENT OF RELATIONSHIP OF EACH ASSESSMENT VARIABLE TO TYPES OF CARE

Item	χ^2 Chi Square	d.f.	Contingency Coefficient	Cramer's V	Kendall's Tau
Location	706.52*	24	.769	.602	
Clinical Service	18.63	12	.323	.197	
Psycho-Social Support:	56.66*	12	.322	.311	.211*
-None	18.55*	4	.191	.195	
-Spouse	74.30*	4	.363	.391	
-Family	27.83*	4	.232	.239	
-Clergy	23.28*	4	.214	.219	
-Friend	6.066	4	.111	.112	
-Other	28.38*	4	.234	.241	
In Patient	85.11*	4	.386	.418	
Stay	397.77*	28	.679	.462	-.613*
Admitted From:	288.28*	28	.618	.393	
Awaiting Placement	65.19*	4	.343	.366	
Wait Time	11.18	9	.405	.256	-.104
Placement Requested	35.10*	16	.604	.379	
Age	175.49*	24	.516	.278	-.408*
Sex	4.78	4	.098	.099	
Resident Of:	16.35*	8	.181	.130	
Marital Status	104.92*	12	.422	.268	
Dependency	321.36*	12	.631	.469	.352*
Deterrent:-					
- None	96.73*	4	.407	.446	
-No Bed	55.41*	4	.319	.337	
-Financial	.899	4	.042	.043	
-No Home	20.31*	4	.200	.204	
-Family	55.48*	4	.320	.337	
-Reject	66.97*	4	.347	.371	
Diagnosis Acute -					
-None	278.10*	4	.602	.756	
-Unknown	18.67*	4	.192	.196	
Chronic Condition:-					
-None	69.34*	4	.353	.377	
-Alcohol	7.23	4	.120	.122	
-Anemia	.75	4	.039	.039	
-Angina	7.02	4	.119	.120	
-Arthritis	27.14*	4	.229	.236	
-Cardiac	1.93	4	.063	.063	
-Cong. H.F.	18.33*	4	.190	.194	

continued.......................

Item	χ^2 Chi Square	d.f.	Contingency Coefficient	Cramer's V	Kendall's Tau
Chronic Condition - cont'd....					
-Diabetic	11.88*	4	.154	.156	
-Drug Abuse	9.67*	4	.139	.141	
-Hypertension	2.06	4	.065	.065	
-Malignancy	4.63	4	.097	.097	
-Mental Illness	22.42*	4	.210	.214	
-Neuro. Disorder	135.64*	4	.467	.467	
-Resp. Disease	4.48	4	.095	.096	
-C.V.A.	14.60*	4	.171	.173	
-Fracture	25.60*	4	.223	.229	
-Other	43.04*	4	.285	.297	
Stability	142.16*	4	.475	.540	
Severity:					
-Present	76.43*	12	.368	.231	-.026
-3 months	168.02*	12	.506	.339	-.270*
-1 year	210.72*	12	.549	.379	-.362
Health Risk:					
-None	24.63*	4	.219	.225	
-Obesity	6.93	4	.118	.119	
-Malnourished	3.92	4	.089	.089	
-Smoking	23.79*	4	.216	.221	
-Suicidal	6.94	4	.118	.119	
-No Exercise	47.50*	4	.298	.312	
-Fragile Skin	54.07*	4	.316	.333	
-Other	7.50	4	.123	.124	
Potential - Rehab.	136.74*	8	.468	.375	.419*
Reassess Care	453.72*	12	.694	.557	-.649*
Sight	45.91*	8	.293	.217	-.163*
Hearing	54.74*	8	.318	.237	-.165*
Speech	39.56*	8	.274	.201	-.149*
Bathing	207.43*	8	.546	.461	-.372*
Dressing	146.44*	8	.481	.388	-.271*
Walking.	53.97*	8	.315	.235	.0006
Go Outside	84.66*	8	.384	.295	.150*
Voluntary Motion	78.55*	8	.373	.284	-.132*
Transfer	66.20*	8	.345	.261	.026
Wheeling	70.08*	8	.354	.268	-.026
Bladder Function	122.50*	8	.448	.355	-.156*
Bowel Function	93.44*	8	.401	.310	-.279*
Toileting	97.32*	8	.398	.307	.0004
Eating	53.68*	8	.315	.235	-.056*

continued.......................

Item	χ^2 Chi Square	d.f.	Contingency Coefficient	Cramer's V	Kendall's Tau
Eats - Where	113.11*	8	.434	.341	.421*
Dentition	60.70*	8	.333	.249	-.090
Special Diet	9.03	4	.134	.136	
Verbal Communication-Adeq.	21.52*	4	.206	.210	
V.C.I.:					
-Education	3.37	4	.082	.083	
-Physical	21.63*	4	.206	.211	
-Cultural	2.51	4	.072	.072	
-Emotional	11.55*	4	.152	.154	
-Other	3.531	4	.084	.085	
Non Verbal Comm	17.90*	4	.188	.192	
Behavior	61.31*	16	.334	.177	
Memory	152.88*	8	.489	.396	-.383*
Judgement	188.76*	8	.528	.440	-.407*
Mood:					
-Depressed	18.05*	8	.189	.136	-.094*
-Anxious	13.65	8	.165	.118	.006
-Uncooperative	23.50*	8	.214	.155	-.118*
Social Initiative	95.33*	8	.405	.312	-.218*
Service Requirements:					
-Physio	102.24*	4	.416	.458	
-Occupational Ther.	38.65*	4	.271	.282	
-Speech Therapy	30.80*	4	.244	.251	
-Respiratory Ther.	27.31*	4	.230	.237	
-Diversional Ther.	87.41*	4	.390	.424	
-Social Case Wrk.	12.70*	4	.159	.161	
-Psych. Services	17.94*	4	.188	.192	
-Sheltered W.S.	4.15	4	.092	.092	
-Community S & I	17.24*	4	.185	.188	
-Oral Medications	23.31*	4	.214	.219	
-Inj. Medications	52.20*	4	.311	.327	
-Skilled Treatment	171.20*	4	.510	.593	
-Other	4.71	4	.098	.098	
Site	893.19*	28	.806	.671	
Program:					
-None	43.91*	4	.287	.300	
.. -Day/Night	5.44	4	.105	.106	
.. -Geriatric D.C.	5.44	4	.105	.106	
.. -Psych. Day/Night	24.68*	4	.219	.225	
.. -Diabetic Day	7.42	4	.122	.123	
- Rehab.	11.52*	4	.152	.154	
-Skilled Med/Nurse	18.87*	5	.193	.197	

continued..................

Item	χ^2 Chi Square	d.f.	Contingency Coefficient	Cramer's V	Kendall's Tau
Program: cont'd....					
.. -Surgical D.C.	-	-	-	-	
.. -Crisis Centre	2.81	4	.076	.076	
-Physician's Office	57.30*	4	.324	.343	
.. -Meals on Wheels	49.47*	4	.304	.319	
-Home Nursing	16.87*	4	.183	.186	
-A.A. Program	2.81	4	.076	.076	
-Homemaker	23.00*	4	.212	.217	
.. -Other Comm.Service	14.89*	4	.1722	.174	
Input:					
-Client	167.75*	4	.506	.587	
-Physician	11.16*	4	.149	.151	
-Nurse	50.42*	4	.306	.322	
-Social Worker	18,89*	4	.193	.197	
-Family	3.68	4	.086	.087	
Position of Assessor	356.08*	16	.658	.437	

* Item and Types of Care have dependent relationship at $\alpha = .05$ level of significance

.. sample size is $\nless$ 6

The other method undertaken to assess the degree of concurrent validity was a multiple group discriminant analysis and Bayesian classification. A total of 461 patients were classified into one of the five Types of Care, using the BMD07M program (Dixon, 1973). The same 74 assessment variables as used in the factor analysis were utilized, for the same reasons. The relative discrimination power of each of the 74 assessment variables was indicated by use of stepwise discriminant analysis. Findings are summarized in Table 4.37, showing the order of entry of the variables from the first to the last step. The F-values are provided to indicate the relative contribution to discrimination of the 5 Types of Care. The most discriminating variable is the Time Span for Reassessment of Care, while the least discriminating is Other Health Risks. Also reported is the Wilks' Lambda statistic which is essentially the ratio of the generalized variance within to the estimated generalized variance total. Small values indicate "good" discrimination (McCabe, 1975). After 22 variables have entered, the F-value is no longer significant ($\alpha = .05$), which leads one to believe that additional variables beyond this point do not contribute substantially to prediction.

TABLE 4.37

STEPWISE DISCRIMINANT ANALYSIS

Step	Variable Entered	F Value to Enter or Remove	d.f.	Wilks' Lamba
1	Re-assess Care	295.95	4,456	.278
2	Bathing	23.39	4,455	.231
3	Deterrent - No Bed	10.92	4,454	.210
4	Stay	10.98	4,453	.193
5	Fragile Skin	10.49	4,452	.175
6	Eats - Where	8.67	4,451	.163
7	Voluntary Motion	6.73	4,450	.154
8	Potential for Rehab.	6.51	4,449	.145
9	Dependency	5.99	4,448	.138
10	Age	6.26	4,447	.131
11	Smokes	5.48	4,446	.124
12	Deterrent - Family	5.27	4,445	.119
13	Acute Diagnosis - None	5.06	4,444	.114
14	Health Risk-No Exercise	5.13	4,443	.109
15	Chronic Condition - Other	4.50	4,442	.104
16	Abusive	4.15	4,441	.101
17	Severity in one year	3.31	4,440	.098
18	Deterrent - Reject	3.19	4,439	.095
19	Deterrent - No home	3.41	4,438	.092
20	Support - Clergy	2.99	4,437	.089
21	Chronic Cond.-Diabetic	2.78	4,436	.087
22	Severity - Present	2.75	4,435	.085
23	Sex	2.26	4,434	.083
24	Severity - 3 mos.	2.28	4,433	.082
25	Obesity	2.42	4,432	.080
26	Hearing	2.17	4,431	.078
27	Non Verbal Comm.	2.07	4,430	.077
28	Eating	2.01	4,429	.075
29	Chronic Cond.-Neurological	1.95	4,428	.074
30	Chronic Cond.-Mental Illness	2.26	4,427	.073
31	Support	2.07	4,426	.071
32	Source of Support-Spouse	2.26	4,425	.069
33	Deterrent - None	1.94	4,424	.068
34	Goes Outside	1.83	4,423	.067
35	Source of Support - Friend	1.97	4,422	.066
36	Chr. Cond-Respir. Disease	1.78	4,421	.065
37	Wander	1.61	4,420	.064

continued...........

Step	Variable Entered	F. Value to Enter or Remove	d.f.	Wilks' Lamba
38	Chr. Condition - Alcohol	1.65	4,419	.063
39	Acute Diag. - Unknown	1.61	4,418	.062
40	Health Risk -Suicide	1.58	4,417	.066
41	Chr. Cond.-Heart Failure	1.43	4,416	.060
42	No Support	1.27	4,415	.059
43	Stability	1.23	4,414	.059
44	Chr. Cond.-Malignancy	1.174	4,413	.058
45	Chr. Condition-Fracture	1.14	4,412	.057
46	Memory	0.96	4,411	.057
47	Judgement	1.03	4,410	.056
48	Speech	0.96	4,409	.056
49	Chr. Condition - C.V.A.	0.87	4,408	.056
50	Chr. Condition-Arthritis	0.80	4,407	.055
51	Chr. Condition-Cardiac	0.82	4,406	.055
52	Source of Support-Family	0.78	4,405	.054
53	Toilet	0.68	4,404	.054
54	Transfer	1.08	4,403	.053
55	Wheeling	0.92	4,402	.053
56	Bowel	0.87	4,401	.052
57	Chr. Condition - Anemia	0.72	4,400	.052
58	Health Risk - None	0.65	4,399	.052
59	Health Risk-Malnourished	1.05	4,398	.051
60	Dentition	0.75	4,397	.051
61	Verbal Comm. Adequate	0.60	4,396	.050
62	Bladder	0.57	4.395	.050
63	Dressing	0.55	4.394	.050
64	Chr. Cond-Hypertension	0.49	4,393	.049
65	Sight	0.43	4.392	.049
66	Initiative	0.33	4.391	.049
67	Special Diet	0.32	4,390	.049
68	Chr. Condition-Angina	0.32	4,389	.049
69	Mood - Uncooperative	0.26	4,388	.049
70	Chr. Condition - None	0.24	4,387	.049
71	Walking	0.21	4,386	.048
72	Mood - Anxious	0.18	4,385	.048
73	Mood - Depressed	0.22	4,384	.048
74	Health Risk - Other	0.06	4,383	.048

Table 4.38 shows a comparison of classification prediction by Bayesian Procedures and Classification and by the Medicine Hat Assessors. The overall agreement of 89.1% indicates a highly acceptable degree of consonance of classification using the two methods. A caution to the reader is required because the probabilities of a patient being in a specific Type of Care is partially a function of the prior probability which was based on the sample size of each Type of Care as determined by the Medicine Hat Assessors.

TABLE 4.38

NUMBER OF CASES CLASSIFIED INTO EACH TYPE OF CARE

N = 461[a]

MEDICINE HAT ASSESSOR	DESCRIMINANT FUNCTION AND BAYESIAN CLASSIFICATION					
	Type 1	Type 2	Type 3	Type 4	Type 5	Total
Type 1	7	3	0	0	1	11
Type 2	3	221	7	1	2	234
Type 3	0	13	37	4	2	56
Type 4	0	0	0	29	7	36
Type 5	0	1	0	6	117	124
Total	10	238	44	40	129	461
% Agreement	66.6%	93.6%	74%	76.3%	92.5%	89.15%

[a] Twenty-nine cases were lost to analysis because of missing data which could not be recoded.

The highest posterior probability for inclusion in a Type of Care is presented in Table 4.39, in terms of agreement or disagreement with the Medicine Hat assessors. Of the 461 cases, 239, or 51.8%, were correctly classified by the Bayesian procedure, with a probability of .99 or more. It can also be seen that the higher the probability of a patient being classified into a Type of Care, the less the disagreement with the assessor. For example, for cases with $p \geqslant .99$, the agreement was 97%, but under $p \leqslant .5$, the agreement dropped to 66.6%.

TABLE 4.39

HIGHEST POSTERIOR PROBABILITY OF BEING IN EACH ASSESSED TYPE OF CARE

Probability	Medicine Hat Assessors' Classification by Agreement or Disagreement with the Bayesian Procedure											
	Type 1		Type 2		Type 3		Type 4		Type 5		Total %	
	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree
.99 +	3	1	139	3	8	2	8	1	81	0	239 97%	7 2.8%
.95 - .98	1	0	33	1	10	4	6	1	17	1	67 90.5%	7 9.4%
.75 - .94	2	2	35	2	13	8	6	3	14	3	70 79.5%	18 20.4%
.50 - .74	1	1	14	5	5	6	6	2	5	3	31 66.0%	16 34.0%
Less .5	0	0	0	2	1	0	3	0	0	0	4 66.6%	2 33.3%
TOTAL	7	4	221	13	37	20	29	7	117	7	411 89.0%	50 11.0%

A summary of the discriminant analysis can be obtained by examination of a scatter diagram of cases in relation to the means of each group or Type of Care as plotted, using the first canonical variate against the second (Figure 4.1). Those cases lying close to the mean of a group would have high probability of being in that group, however, the further they are from that mean toward the mean of another group, the lower the probability becomes that they are in the first group, and the higher the probability that they are in the second group. It is these latter cases which have the possibility of being mis-classified without precise statistical methods to provide analysis for discrimination.

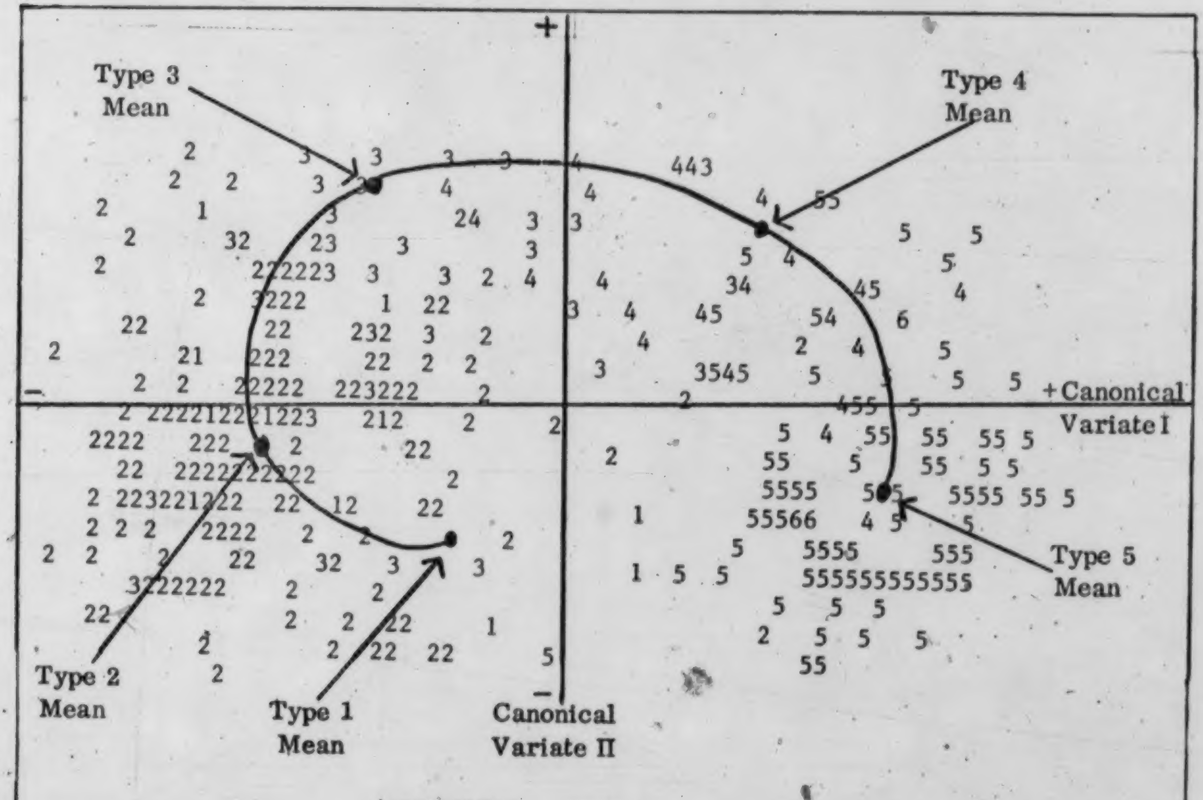

FIGURE 4.1

SCATTER DIAGRAM OF CASE MEANS AND TYPES OF CARE MEANS ON CANONICAL VARIATES 1 AND 2

The Federal W.P.R. refers to the classification as being a numerical system in its progression from Type 1 to Type 5, which reflects the increasing qualifications, numbers and variety of staff, increased cost and increased complexity of services required, which would tend to indicate a linear relationship of the group means. The concept of complexity might appear diagramatically as in Figure 4.2

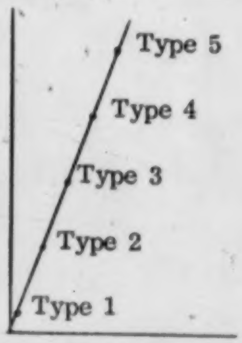

FIGURE 4.2

LINEAR RELATIONSHIP OF TYPES OF CARE MEANS RELATED TO COMPLEXITY OF NEEDS

An interesting and important facet of the scatter diagram (Figure 4.1) is the curvilinear relationship of the means of each Type of Care to one another, with the Types in order along the curve. Without giving an interpretation of these two canonical variates, it is clear that Type 2 and Type 5 are the furthest apart (and most easily discriminable) of any two groups, a finding which is consistent with the findings of factor analysis of the classification variables reported earlier. As well, Type 1 is closer to Type 5 than is Type 2. Because the Types are ordered along the curve in numerical order, there is some justification for postulating about the possible ordinal nature of the Types. However, because the relationship of the group means is curvilinear, support is lacking for the Federal W.P.R. claim that program requirements may increase with increasing numerical Type. If our finding is valid, there are major implications for changes in priorities and funding to provide care for individuals with different, but no less complex, needs in the Types of Care, with the possible exception of Type 1.

EMPIRICAL VALIDITY

In order to get an indication of the degree of empirical validity, a random sample of 100 patients was chosen using the Neyman's Allocation Formula to stratify the sample according to institutions and those awaiting placement. An expert with extensive background in health care, as well as being a member of the Federal Working Party, was asked to classify the sample patients chosen, using only the information provided by nurse assessors in the assessment portion of the instrument. Results are summarized in Table 4.40. The overall percentage agreement in relation to Types of Care is 79.7%, with chi square of 206.906 with 20 degrees of freedom and a contingency coefficient of .821, both of which are significant at the $\alpha = .05$ level. Analysis of individual Types of Care shows high agreement in Types 1, 2 and 5 but 54.5% agreement in Type 3 and only 15.3% agreement in Type 4. The major problem appears to be the differentiation between Type 3 and Type 4 and, to a lesser degree, between Type 2 and Type 3. These findings point to the need for further research to develop variables which will discriminate more precisely between

Types 2, 3 and 4.

TABLE 4.40

INTER-RATER EMPIRICAL VALIDITY TEST OF CLASSIFICATION BY TYPES OF CARE

Medicine Hat Assessor Classification	Expert Classification					
	Type 1	Type 2	Type 3	Type 4	Type 5	Total
Type 1	5	0	0	0	1	6
Type 2	2	39	0	0	0	41
Type 3	0	4	6	0	1	7
Type 4	0	1	9	1	0	11
Type 5	1	0	0	1	28	30
Total	8	44	15	2	30	99
% Agreement	71.4%	91.7%	54.5%	15.38%	93.3%	79.7%

$\chi^2 = 206.906$ d.f. = 20
Contingency Coefficient = .821

Concern regarding the disagreement identified above led the investigator to examine the agreement between the Medicine Hat assessor, the expert and the Bayesian Classification for the cases in the empirical validation sample. Findings from this analysis appear in Table 4.41. Although overall agreement was 70.9%, the expert disagreed twice as often as the Bayesian Classification and nearly three times as often as the

Medicina Hat assessor when there was one disagreement and the other two agreed. In only one case was there total disagreement among the three methods of classification.

TABLE 4.41

AGREEMENT AMONG MEDICINE HAT ASSESSORS, EXPERT, AND BAYESIAN CLASSIFICATION BY TYPE OF CARE

Assessed Type	All Three Agree	One Disagrees			All Three Disagree	Grand Total
		Assessor	Expert	Bayesian		
1	1	0	0	1	0	2
2	34	0	1	3	1	39
3	5	5	1	0	0	11
4	0	0	10	1	0	11
5	26	0	2	2	0	30
TOTAL	66	5	14	7	1	93
% Total	70.96%	5.37%	15.05%	7.53%	1.07%	100 %

The other inter-rater test was carried out between the Medicine Hat assessors and the expert in classifying the patients according to sites where their needs could best be met. As shown in Table 4.42, the overall agreement was 85.5% with the chi square and the contingency coefficient significant at the $\alpha = .05$ level. Higher agreement is indicated in the institutions than in the home or lodge environment, which possibly indicates additional factors on which the Medicine Hat assessors made their decisions, but about which the expert was unaware, not knowing the patient.

TABLE 4.42

INTER-RATER VALIDITY TEST OF CLASSIFICATION BY SITES MEDICINE HAT ASSESSOR AND EXPERT

Medicine Hat Assessor	Expert Assessor							
	Own Home	Lodge	Nursing Home	Auxiliary Hosp.	Rehab. Hosp.	Psychiatric Facility	Gen. Care Hosp.	Total
Own Home	3	0	0	0	0	0	2	5
Lodge	2	1	1	0	0	0	0	4
Nursing Home	0	1	40	0	0	0	0	41
Auxiliary Hospital	1	0	1	13	1	0	0	17
Psychiatric Facility	0	0	0	0	0	1	0	1
Gen. Acute Hospital	2	0	0	1	0	1	25	29
Total	8	2	43	14	1	2	27	97
% Agreement	46.15%	33.3%	95.2%	83.8%	0%	66.6%	89.3%	85.5%

$\chi^2 = 259.22$ d.f. = 36
Contingency Coefficient = .849

The empirical validation techniques utilized point to an acceptable degree of this kind of validity of the instrument, however, we must recognize the need for further research and development of the instrument in order to improve the discrimination, especially between Types 3 and 4. Additional variables may be required to make this possible.

SUMMARY

The content of this chapter is a report of the findings of the study on Patient Care Classification by Types of Care. A description of the population characteristics was undertaken which identified the multi-dimensional status of the 490 individuals on the study day in the four institutions and those awaiting placement in the long-term care facilities. Based on the assessment of medical, physical, psycho-social and demographic considerations, members of the study population were classified into one of the five Types of Care, the site where their needs could best be met and program requirements identified for those whose needs could be met in a non-institutional environment.

In order to identify the degree of reliability and validity of responses using the instrument and User's Manual developed by the investigator, statistical analysis was undertaken. Findings may be summarized as follows:-

Reliability Studies: With the exception of nine variables, there is a statistically significant relationship ($\alpha = .05$) between the responses of the two independent nurse assessors on all the variables in the instrument. This does not necessarily point to an acceptable degree of reliability, rather that the similarity of response could not have occurred by chance alone. The variables which have significant findings by χ^2 are also significant when testing by the contingency coefficient, phi or Cramer's V, and Kendall's Tau. When analyzing the percentage agreement between the two assessors, the mean percentage agreement is 88% for the assessment variables and 96% for the classification variables. The range of mean percentage agreements is from 67.3% to a high of 100%. The median percentage agreement for the assessment variables is 88.7%; 98.4% for the classification component; and an overall median agreement of 91.3%. Additional summary statistics are provided in Table 4.43.

TABLE 4.43

SUMMARY OF RESULTS OF ITEM RELIABILITY STUDIES

	Minimum	Maximum	Median	Mean	Number of Variables
Assessment:					
- Phi or Cramer's V	.037	1.00	.607	.558	89
- % Agreement	67.3%	100%	88.7%	88%	95
-Kendall's Tau	.404	1.00	.704	.699	33
Classification:					
-Phi or Cramer's V	.235	.765	.494	.493	18
-% Agreement	80.4%	100%	98.4%	96%	23
- Kendall's Tau	.856	.856	.856	.856	1
Overall:					
-Phi or Cramer's V	.037	1.00	.494	.547	107
-% Agreement	67.3%	100%	91.3%	89.5%	118
-Kendall's Tau	.404	1.00	.707	.740	34

Although no traditional reliability coefficients can be calculated because of the nature of the data, the above measures indicate an acceptable degree of reliability.

Validity Studies: An acceptable degree of face validity was identified from feedback by the users. Content validity was established by showing that the instrument items are a sample of a universe of items which measure the patient characteristics as defined in the Federal W.P.R. Construct validity was examined by factor analyses. Although only 39.2% of the variance within the assessment variables is accounted for by the first 6 assessment factors and 49.8% of the variance of the classification variables in the first six classification factors, the factors are identifiable and provide information about the underlying constructs.

Concurrent validity was identified by two methods. First, the degree of relationship of the instrument items to Types of Care was measured by use of chi square, contingency coefficient, Cramer's V, and on the ordinal variables, Kendall's Tau. Of the total of 118 variables, 88 are statistically significant at the $\alpha = .05$ level. That is, the relationship of these variables to Types of Care could not have occurred by chance alone. It should be noted that, with the exception of special diet, inadequate verbal communication because of educational or cultural reasons, and anxiety, all the ADL and psycho-social variables have a significant relationship to Types of Care. A summary of the findings appears in Table 4.44.

TABLE 4.44

SUMMARY OF RESULTS OF CONCURRENT ITEM VALIDITY STUDIES

	Minimum	Maximum	Median	Mean	Number of Items
Assessment:					
-Cramer's V	.039	.756	.238	.259	103
-Kendall's Tau	.0006	.649	.164	.221	32
Classification:					
- Cramer's V	.076	.671	.180	.218	15
Overall:					
-Cramer's V	.039	.756	.235	.254	118

The second method used to identify the degree of concurrent validity was multiple group stepwise discriminant analysis and Bayesian classification on 74 assessment variables to identify the probability of each case belonging to each Type of Care. A comparison was then done between the Type of Care with the highest probability and the Type of Care assigned by the Medicine Hat assessor. The overall percentage agreement is 89%, with a range from a low of 66.6% for Type 1, which may or may not be an accurate reflection because of the small sample size, to 92.5% for Type 5 patients. The results indicate good discriminability as shown by the Wilks' Lambda which at the last step is 0.048, and 0.085 at step 22 which is the last step that is statistically significant. A scatter diagram of cases in relation to the means of each Type of Care was plotted using the first canonical variate against the second. The diagram shows a curvilinear relationship of the means of each Type of Care to one another, with the Types in order along the curve.

The empirical validity study undertaken by an independent external expert was to identify whether or not the item responses from the assessment component of the instrument contain adequate information on which to base the classification decision by an expert, without any other knowledge of the patient. Although the overall agreement between the Medicine Hat assessor and the expert was 79.7%, there are major problems within the categories. Type 5 and Type 2 have agreements over 90%, however, there is 71% agreement for Type 1, 54% for Type 3, and a low 15% agreement for Type 4. Although there was only a small sample size, this result may indicate the need for more precise determiners in the assessment component of the instrument and/or more clearly stated patient characteristics for each Type of Care.

To further analyze the agreement and disagreement of the Type of Care classification, a three way examination of the Medicine Hat assessor, the expert and Bayesian classification was undertaken. Findings show 70.9% overall agreement but the expert disagrees twice as often as the Bayesian Classification and nearly three times as often as the Medicine Hat assessor when there is one disagreement and the other two agree.

Even with the limitations noted above, there is an adequate indication of face, content, construct and concurrent validity. The overall degree of empirical validity is adequate; however, the validity related to Type 4, in particular, is not totally acceptable, pointing to the need for additional development of the assessment and classification system.

CHAPTER V

CONCLUSION

The purpose of this chapter is to briefly summarize the study of Patient Care Classification by Types of Care, to provide an overview of findings of the reliability and validity studies undertaken, to discuss some of the limitations of the study and to outline the major conclusions and recommendations related to research and administrative policy decisions.

SUMMARY

The study was undertaken to develop and test an instrument for assessment and classification of patients by Types of Care. The project was initiated by the Medicine Hat and District Health Planning Committee as one method of identifying the needs of the community for health care programs and facilities, as well as describing the characteristics of the study population to show the appropriateness of present patient program-placement. The major objective of the investigator was to identify the degree of reliability and validity of data obtained by use of the instrument.

Using the Types of Care classification and related patient characteristics, as defined in the Report of the Working Party on Patient Care Classification, November, 1973, as a criterion measure, an assessment and classification instrument and User's Manual were developed. Assessment items were related to the demographic characteristics, medical status and physical and psycho-social functioning of each patient.

Classification items included the Type of Care, the site where needs could best be met and program requirements.

Following a pilot test and pretest, a clinical analytical survey was carried out on a specific day, on a study population of 490 patients in an acute care hospital, auxiliary hospital, two nursing homes and individuals awaiting placement in the long-term care facilities. The assessors were registered nurses in the institutions and in the community, providing care to the patients, and additional input from other health care professionals, the patient and his family was encouraged.

A stratified random sample of 100 patients was used for an inter-rater reliability study and another sample of 100 patients was randomly chosen for an empirical validity study. Statistical procedures were undertaken to identify the degree of reliability and validity of the instrument items and to produce descriptive frequency distributions.

An acceptable degree of item reliability was identified in the inter-rater study, as indicated by a median 91.3% agreement between the two assessors over all items. Acceptable face validity was indicated by feedback from the users, and content validity was established by content analysis. Construct validity was shown by two factor analyses, one on the assessment variables, and another on the classification items. The major assessment factor was a physical dependency construct. Both of these factor analyses identified a factor associated with acute psychiatric needs, in addition to other factors related to Types of Care as defined. Concurrent validity was established by examination of the extent of relationship between each item and

Types of Care. Stepwise discriminant analysis and Bayesian classification indicated adequate discriminability between Types of Care, with Wilks' Lambda being .048 at the last step. Agreement between the Medicine Hat assessors and the Bayesian classification was 89% overall. A scatter diagram of the means of each Type of Care plotted on the first two canonical variates showed a curvilinear relationship, with the Types of Care in order along the curve. The empirical validity study showed overall agreement between the expert and the Medicine Hat assessors to be 79.7%, however, difficulty was encountered with identifying Type 4 patients.

In conclusion, results of the item reliability study indicate an acceptable degree of reliability, even though no traditional reliability coefficients were calculated because of the nominal and ordinal nature of the data and the heterogeneous nature of the Types of Care concept. The presence of an adequate degree of face, content, construct, concurrent and empirical validity was indicated, but certain limitations of the study exist. The major limitations are listed below.

LIMITATIONS

1. The extent of knowledge about Patient Care Classification by Types of Care is limited because of its relatively recent development. In fact, it is a conclusion of this study that the concept requires more development. Although aware of this weakness, the investigator based the study on the stated Types of Care, related patient characteristics and associated terminology. Refinement or redefinition

of the Types of Care, while a worthwhile pursuit, was considered to be beyond the scope of this study.

2. The results of this study apply only to the study population situated in one geographical and cultural area and findings should be interpreted in terms of this specific patient population only. The extent of generalizability of the findings to other populations is unknown.

3. The study is a "snap shot" look at the population on one day. Therefore, although the findings reflect the characteristics on that particular day, they may be atypical of the population at other times.

4. Patients were assessed by clinical nurse assessors who were taking part in the study as well as carrying their regular workload. Time constraints may have affected their objectivity. Input to assessment from others was encouraged, but no systematic method was defined for this additional input. As well, potential sources of external invalidity such as Hawthorne effect, novelty and disruptive effects, experimenter effect and pretest sensitization were not controlled.

5. Assessment was based on inferences from average behavior rather than on standardized observational techniques. Individual assessors may have had different interpretations of the terminology associated with items and their categories, despite the standardization attempted by the User's Manual and orientation sessions.

6. The empirical validity study was carried out by one health care professional acting as an expert, rather than a panel of experts who might have provided a more varied perspective of patient needs.

7. No attempt was made to identify predictive validity, that is, the ability of the data gathered by use of the instrument to forecast over a period of time. Further research will be required to investigate this kind of validity.

8. Sample size within the five Types of Care shows major variation. Types 2, 3 and 5 sample size was adequate, however, Type 4 was relatively low and Type 1 sample size was inadequate on which to base generalizable statements.

9. The technique of validating the instrument by comparing with an automated classification based on assessment information was restricted to discriminant analysis and Bayesian classification that are based on linear models. No attempt was made to search for or apply non-linear models for comparison and validation.

10. From an extensive review of the literature and discussion with experts in the field of health care delivery and measurement, there was no available "criterion of adequacy" related to non-parametric statistics in the area of testing for reliability and validity of instrument items. The investigator has accepted the findings as

being an adequate indication of reliability and validity, however, the reader may draw his own conclusions from the results presented.

CONCLUSIONS

1. Because of the stated limitations and the urgency to develop and apply the concept of Patient Care Classification, the need for further research in this area of study is critical.

2. The instrument developed to assess and classify patients based on the Types of Care concept has been found, within the stated limitations, to be reliable and valid.

3. It would appear from results of the statistical analysis in this study that there is an additional Type of Care which might be termed "Acute Psychiatric Care" which is not identified in the Federal W.P.R. This finding indicates the need for additional development of the Types of Care concept.

4. The finding of a high disagreement of the expert assessor with the Medicine Hat assessors in identifying Type 4 patients points to the need for further development of the definition and characteristics of Type 4 patients. There is also need for identification of additional determiners in the instrument, to assist with discrimination between Types of Care, in particular as related to Type 4.

5. The curvilinear relationship of means of Types of Care in order

along the curve, identified in the discriminant analysis, has major implications for program and planning decisions. That is to say, that although the Federal W.P.R. indicates that complexity of care requirements increases with the numerical value of the Types of Care, the results of this study contradict this assumption because they indicate that the complexity between the Types is different and cannot be seen as simply varying degrees of one kind of complexity.

RECOMMENDATIONS

This section, giving recommendations, is divided into two parts. First, the research recommendations and, secondly, recommendations related to administrative policy.

RESEARCH RECOMMENDATIONS

1. Further research and demonstration projects are recommended in order to increase the data base, define additional assessment variables, refine the operational definitions in the User's Manual and study the adequacy of the criterion measure, Types of Care, and related patient characteristics.

2. Longitudinal studies are required to identify the extent of predictive validity, which was beyond the scope of this study.

3. Research related to Levels of Care, that is, the quantitative aspect of care requirements within each Type of Care, should be

undertaken to develop knowledge of the requirement for staff and programs to meet the needs of patients in all Types of Care in the home, ambulatory or institutional setting.

4. Study should be undertaken to determine a weighting system for objectively determining the Type of Care required from patient assessment information.

5. Further research should be undertaken to do in-depth analysis of patient characteristics within each Type of Care, to identify their specific underlying constructs and, therefore, provide information on which to base educational programs for health care personnel, development of information for epidemiological study into the cause and prevention of physical and psycho-social dependency and provide knowledge on which to base long-term planning of health care delivery.

ADMINISTRATIVE POLICY RECOMMENDATIONS

It is recommended:

1. That health care agencies experiment with the instrument, to identify its utility in aiding with initial patient program-placement decisions as well as ongoing assessment of program requirements as patients' conditions change over time.

2. That health care planners assess the applicability of data obtained in studies of this kind, to assist with short-term as well as long-term planning for programs in institutions, a community, a region or at the provincial level.

3. That, following further refinement of the instrument by ongoing research, consideration be given to basing a finance mechanism on identified requirements for patient care.

4. That the development of alternate sites and programs for delivery of health services be based, in part, on information about population need identified in studies of this kind.

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APPENDIX 1

SUMMER 1974

MEDICINE HAT STUDY
OF
PATIENT CLASSIFICATION BY TYPES OF CARE

Please circle the number of the correct response or fill in the blank where requested. *CONSULT THE PHYSICIAN OR OTHER HEALTH PROFESSIONAL AS REQUI*

SECTION A: IDENTIFICATION DATA

1. NAME OF CLIENT____________________

2. LOCATION
   1. Medicine Hat General
   2. Dr. Dan MacCharles Auxiliary
   3. River View Nursing Home
   4. Sunnyside Nursing Home
   5. Cypress View Lodge
   6. Home
   7. Other (specify)____________________

3. CLIENT IS CURRENTLY:

   A. IN-PATIENT: Admission Date____________________
   DAY MONTH YEAR

   Admitted From:
   1. Home (rural)
   2. Home (urban)
   3. Acute Hospital
   4. Auxiliary Hospital
   5. Nursing Home
   6. Senior Citizens' Lodge
   7. Psychiatric Facility
   8. Other (specify)____________________

   B. OUT-PATIENT: Date of Service____________________
   DAY MONTH YEAR

   C. WAITING LIST: Date of Contact for Service____________________
   DAY MONTH YEAR

4. SEX
   1. Male
   2. Female

5. MARITAL STATUS
   1. Married
   2. Single
   3. Widowed
   4. Divorced or Separated

6. YEAR OF BIRTH____________

7. RESIDENT OF
   1. Alberta
   2. Saskatchewan
   3. Other (specify)____________________

8. PRIMARY SUPPORT IN COMMUNITY

   A. 1. No Support
   2. Limited Support
   3. Adequate Support

   B. SUPPORT IS:
   1. Spouse
   2. Family Member
   3. Business Contact
   4. Religious Affiliation
   5. Friend
   6. Social Group
   7. Other (specify)____________________

9. EXPECTED TIME SPAN FOR PROGRAM TO MEET CURRENT NEEDS
   1. Less Than 1 Month
   2. 1 to 3 Months
   3. 4 to 12 Months
   4. More Than 12 Months

10. APPROXIMATE TIME SPAN BEFORE REASSESSMENT REQUIRED__________ days weeks months

11. PRIMARY MEDICAL DIAGNOSIS:____________________
____

12. SECONDARY MEDICAL DIAGNOSIS:____________________
____

SECTION-B: PHYSIOLOGICAL FUNCTIONING

13. SIGHT
   1. No Impairment
   2. Some Impairment
   3. Blind

14. HEARING
   1. No Impairment
   2. Some Impairment
   3. Does Not Hear

15. SPEECH
   1. No Impairment
   2. Some Impairment
   3. Does Not Speak

16. PARALYSIS
   1. None
   2. Muscular Weakness or Atrophy
   3. Paralysis

17. GOES OUTSIDE HOUSE/FACILITY
   1. Without Help
   2. With Help
   3. Does Not Go Outside

18. MOVES ABOUT HOUSE/FACILITY
   1. Without Help
   2. With Help
   3. Confined to Bed

19. TRANSFER
   1. Without Help
   2. With Help
   3. Bedfast

20. WALK
   1. Without Help
   2. With Help
   3. Chairfast or Bedfast

21. WHEEL
   1. Without Help
   2. With Help
   3. No Wheeling Required

22. BATHING
   1. Without Help
   2. With Help
   3. Bathed by Others

23. DRESSING
   1. Without Help
   2. With Help
   3. Is Dressed by Other

24. EATING
   1. Without Help
   2. Some Help
   3. Total Help - Oral
   4. Total Help - Tube F
   5. Total Help - Parent

25. EATING - WHERE?

    1. Dining Room
    2. Chair in Bedroom
    3. Bed

26. SPECIAL DIET

    1. Yes
    2. No

27. TOILETING

    USES TOILET ROOM

    1. Without Help
    2. With Help
    3. Never Uses

28. BOWEL FUNCTIONS

    1. Normal Function
    2. Normal With - Laxatives
       - Suppositories
       - Enemas
    3. Impaction
    4. Involuntary Loss
    5. Ostomy - Self Care
    6. Ostomy - Assistance Required

29. BLADDER FUNCTIONS

    1. Normal Function
    2. Retention - No Indwelling Catheter
    3. Retention - Indwelling Catheter
    4. Involuntary Loss - No Catheter or Device
    5. Involuntary Loss - Indwelling Catheter
    6. Involuntary Loss - External Device

SECTION C: PSYCHO-SOCIAL FUNCTIONING

30. COMMUNICATION SKILLS

    A. VERBAL

    1. Adequate

    Inadequate - Reasons: (More than one response may be applicable.)

    2. Educational
    3. Physical
    4. Cultural
    5. Emotional
    6. Other (specify)________________________

    B. NON VERBAL

    1. Adequate
    2. Inadequate

31. MEMORY AND ORIENTATION

    1. Normal
    2. Periods of Forgetfulness, Confusion or Disorientation
    3. No Recall

32. ABILITY TO BE REALISTIC IN JUDGEMENT

    1. Normal
    2. Limited Ability to be Realistic in Judgement
    3. Unable to Make any Judgement

33. MOOD AND BEHAVIOR (Check appropriate level and conditions. More than one condition may be applicable.)

    1. NORMAL

    2. MODERATELY OR OCCASIONALLY
       1. Depressed
       2. Withdrawn
       3. Overactive
       4. Uncooperative
       5. Belligerent

    3. EXTREMELY
       1. Depressed
       2. Withdrawn
       3. Agitated
       4. Uncooperative
       5. Physically Aggressive

34. RISK FACTORS (More than one response may be applicable.)

    1. Patient Abusing Drugs/Alcohol
    2. Self Inflicted Injuries/Suicides
    3. Personal Problems Marital/Family/Self/Community
    4. Traumatic Injuries/Amputations
    5. Psychiatric Disturbance
    6. High Risk Life Style (i.e., overeating, heavy smoker)
    7. Other (specify)________________________

    ____

SECTION D: SUBJECTIVE DECISION OF CARE REQUIREMENTS

35. SERVICE REQUIREMENTS (More than one response may be applicable.)

1. Physiotherapy
2. Occupational Therapy
3. Speech Therapy
4. Vocational Assessment
5. Diversional Therapy (Social, Recreational)
6. Social Casework
7. Psychological Services
8. Marital Counselling
9. Group Therapy
10. Sheltered Workshop
11. Family Therapy
12. Milieu Therapy
13. Community Services (Information and Educational)
14. Oral Medication Administration
15. Injectable Medication Administration
16. Skilled Medical or Nursing Treatment (Performed by Persons with Formal Training as Opposed to On-The-Job Training)
17. Other Requirements not Mentioned Above (specify)________________

36. TYPE OF CARE REQUIRED (Use Definitions of Types of Care)

Type I Type II Type III Type IV Type V

37. SITE WHERE CLIENT NEEDS CAN BE BEST MET (Circle one site only. Assume that all sites are available.)

* 1. Own Home with Appropriate Support Services.
* 2. Foster Home with Appropriate Support Services.
* 3. Boarding Home with Appropriate Support Services.
* 4. Lodge with Appropriate Support Services Available.
5. Nursing Home
6. Auxiliary Hospital
7. Special Rehabilitation Hospital
8. Psychiatric Care Facility
9. General Hospital

38. PROGRAMS REQUIRED TO MEET CLIENT'S CURRENT NEEDS (One or more may be applicable. Assume that all programs are available.)

1. Home Care

Ambulatory Care
2. Day/Night Care
3. Geriatric Day Care
4. Psychiatric Day and Night Care
5. Diabetic Day Care
6. Rehabilitation
7. Skilled Medical and/or Nursing Treatment
8. Surgical Day Care
9. Emergency Care - May or May Not be Admitted
10. Crisis Centre - May or May Not be Admitted
11. Community Resource Centre
12. Physicians Offices
13. Meals-On-Wheels
14. Other Community and Social Services, e.g., homemakers, special equipment, library services
15. Other (specify)________________

39. COMMENTS________________

40. INPUT FOR ASSESSMENT FROM:

1. Client
2. Physician
3. Nurse
4. Social Worker
5. Family
6. Community Contact (specify)________________
7. Other (specify)________________

41. ASSESSOR________________ TITLE (M.D., R.N., M.S.W., etc.)________________

* "Appropriate Support Services" may vary in degree from medical and nursing services on a regular basis to social support services, e.g., shopping, homemaker, meals-on-wheels or home visiting. These services may allow the citizen to be in his home rather than being institutionalized.

APPENDIX 2

WINTER 1975

FOR USE OF THE RESEARCHER ONLY:
CLIENT # ____________

FEBRUARY, 1975

MEDICINE HAT STUDY OF PATIENT CARE CLASSIFICATION BY TYPES OF CARE

The User's Manual gives an accurate explanation of what points are included under each question. Please be familiar with these descriptions before using the questionnaires. Consult the physician, other health professionals, client or his family as required. *All items "starred" may require more than one response. Your cooperation in this project is greatly appreciated.

SECTION "A" IDENTIFICATION

1. NAME OF CLIENT: ____________________

2. LOCATION:
   A. 1. Medicine Hat General
      2. Dr. Dan MacCharles Aux.
      3. Riverview Nursing Home
      4. Sunnyside Nursing Home
      5. Senior Citizens' Lodge
      6. Home
      7. Other (specify) __________
   B. Room # __________
   C. IF IN GENERAL HOSPITAL SERVICE:
      1. I.C.U. 3. Surgical
      2. Medical 4. Psychiatric

3. PSYCHO-SOCIAL SUPPORT IN COMMUNITY:
   A. 1. Unknown
      2. No Support
      3. Limited Support
      4. Adequate Support
   B. MAJOR SOURCES OF SUPPORT:*
      1. No Source Available/Unknown
      2. Spouse
      3. Family Member
      4. Clergy/Priest/Church Worker
      5. Friend
      6. Other (specify) __________

4. CLIENT IS CURRENTLY AN INPATIENT:
   A. 1. Yes
      2. No (if "NO", proceed to #5)
      If "Yes",
   B. Admission
      Date: Day ___ Mo. ___ Yr. ___
   C. Admitted From:
      1. Home (Rural)
      2. Home (Urban)
      3. Acute Hospital
      4. Aux. Hospital
      5. Nursing Home
      6. Sr. Citizens' Lodge
      7. Psychiatric Facility
      8. Other (specify) __________

5. CLIENT IS AWAITING PLACEMENT IN ALTERNATE FACILITY:
   A. 1. Yes
      2. No (if "No" proceed to #6)
      If "Yes",
   B. Date Of Request For Service:
      Day ___ Mo. ___ Yr. ___
   C. Placement Requested:
      1. Auxiliary Hospital
      2. Riverview Nursing Home
      3. Sunnyside Nursing Home
      4. Senior Citizens' Lodge
      5. Other (specify) __________

6. YR. OF BIRTH: ____

7. SEX: 1. Male 2. Female

8. RESIDENT OF: 1. Alberta 2. Saskatchewan
   3. Other (specify) __________

9. MARITAL STATUS: 1. Married 2. Single
   3. Widowed 4. Divorced or Separated 5. Other

10. DEPENDENCY OF CLIENT ON SUPERVISION:
    1. None - Independent
    2. Minimal - Non Health Care Person
    3. Moderate - Professional Nurse Part-Time
    4. High - Professional Nurse 24 Hours Per Day

11. DETERRENTS TO PLACEMENT BASED ON NEEDS:*
    1. None
    2. No Bed In Appropriate Facility
    3. Financial
    4. No Home To Go To
    5. Family Unable Or Unwilling To Care For Client
    6. Client And/Or Family Reject Proposed Placement

SECTION "B" MEDICAL STATUS

12. CLIENT'S MEDICINE HAT PHYSICIAN: ____________________

13. MEDICAL DIAGNOSES: (BOTH "A" & "B" MAY BE APPLICABLE)
    A. Client Has Acute Condition:
       1. None
       2. Unknown - For Investigation And Examination
       3. Primary Diagnosis __________
       4. Secondary Diagnosis __________
    B. Client Has Chronic Condition:*
       1. None
       2. Alcoholism
       3. Anemia
       4. Angina And/Or Myocardial Infarction
       5. Arthritis
       6. Cardia Arrhythmias
       7. Congestive Heart Failure
       8. Diabetes Mellitus
       9. Drug Abuse
       10. Hypertension
       11. Malignancy
       12. Mental Illness
       13. Neurological Disorders
       14. Respiratory Disease - Chronic
       15. Cerebrovascular Accident-Chronic
       16. Fracture - Chronic
       17. Other (specify) __________

14. CLINICAL CONDITION IS STABILIZED: 1. Yes 2. No

15. SEVERITY OF IMPAIRMENT:

	NO IMPAIRMENT	MODERATE IMPAIRMENT	DEBILITATING	L THA
A. Present	1	2	3	
B. In 3 Mos. (Predict)	1	2	3	
C. In 1 Yr. (Predict)	1	2	3	

16. MAJOR HEALTH RISK FACTORS:*
    1. None
    2. Obesity
    3. Malnutrition
    4. Heavy Cigarette Smoker
    5. Suicidal
    6. Lack Of Physical Exercise
    7. Fragile Skin Condition
    8. Other (specify) __________

17. POTENTIAL FOR IMPROVEMENT OF HEALTH THROUGH COORDINATED REHABILITATION PROGRAMS:
    1. None 2. Moderate 3. High

18. CLIENT REQUIRES REASSESSMENT OF CARE PROGRAM:
    1. In One Month Or Less
    2. In Three Months Or Less
    3. In Six Months Or Less
    4. In One Year Or Less

SECTION "C" PHYSICAL FUNCTIONS

19. SENSES:

	NO PROBLEM	SOME PROBLEM	MAJOR PROBLEM
A. Sight	1	2	3
B. Hearing	1	2	3
C. Speech	1	2	3

20. GROOMING:

	NO HELP	SOME HELP	TOTAL CARE
A. Bathing	1	2	3
B. Dressing	1	2	3

21. WALKING:
   1. Without Help
   2. With Help
   3. Chairfast And/Or Bedfast

22. GOES OUTSIDE HOUSE/FACILITY:
   1. Without Help
   2. With Help
   3. Does Not Go Outside

23. VOLUNTARY MOTION OF LIMBS:
   1. No Problem
   2. Muscular Atrophy Or Weakness
   3. Paralysis

24. TRANSFER:
   1. Without Help
   2. With Help
   3. Bedfast

25. WHEELING
   1. Does Not Wheel - Walks
   2. Wheels Without Help
   3. Is Wheeled By Others

26. BLADDER FUNCTION:
   1. Normal
   2. Normal With Supervision
   3. Retention With Or Without Catheter
   4. Involuntary Loss - No Catheter Or Device
   5. Involuntary Loss - Indwelling Catheter Or Device

27. BOWEL FUNCTION:
   1. Normal
   2. Normal With
      - Laxatives
      - Suppositories
      - Enemas
   3. Involuntary Loss
   4. Ostomy - Self Care
   5. Ostomy - Assistance Required

28. USE OF TOILET ROOM:
   1. Without Help
   2. With Help
   3. Never

29. EATING:
   1. Without Help
   2. Some Help
   3. Total Help

30. WHERE CLIENT PRESENTLY EATS:
   1. Dining Room
   2. Chair In Bedroom
   3. Bed

31. DENTITION:
   1. No Problem
   2. Some Problem
   3. Major Problem

32. SPECIAL DIET:
   1. No
   2. Yes

SECTION "D" PSYCHO-SOCIAL FUNCTIONING

33. COMMUNICATION OF NEEDS:
   - A. Verbal
     1. Adequate
     Inadequate Reasons:*
     2. Educational
     3. Physical
     4. Cultural
     5. Emotional
     6. Other (specify) ____________________
   - B. Non Verbal
     1. Adequate
     2. Inadequate

34. BEHAVIOUR:
   1. Appropriate
   2. Comatosed, Semi-Comatosed, Under Anaesthetic
   3. Wandering Or Passive
   4. Abusive, Aggressive, Agitated, Disruptive
   5. Other (specify) ____________________

35. MEMORY AND ORIENTATION:
   1. Normal
   2. Period Of Forgetfulness, Confusion, Disorientation
   3. No Recall

36. ABILITY TO BE REALISTIC IN JUDGEMENT:
   1. Normal
   2. Limited Ability
   3. Unable To Make Any Judgement

37. MOOD:*

	NO PROBLEM	MODERATE PROBLEM	EXTREME PROBLEM
A. Depressed	1	2	3
B. Anxious	1	2	3
C. Uncooperative	1	2	3

38. INITIATIVE IN PARTICIPATING IN SOCIAL ACTIVITIES:
   1. High
   2. Low
   3. None

SECTION "E" SUBJECTIVE EVALUATION OF SERVICE REQUIREMENTS

39. THERAPY AND/OR TREATMENTS:*

1. Physiotherapy
2. Occupational Therapy
3. Speech Therapy
4. Respiratory Therapy
5. Diversional Therapy
6. Social Casework
7. Psychological Services
8. Sheltered Workshop
9. Community Services And Information
10. Oral Medication Administration
11. Injectable Medication Administration
12. Skilled Medical And/Or Nursing Treatment (Performed By Persons With Formal Training As Opposed To On-The-Job Training)
13. Other (Specify) ____________________

SECTION "F" CLASSIFICATION OF TYPE OF CARE, SITES, PROGRAMS

40. Type Of Care (Use Definitions Of Type Of Care)

1. TYPE I 2. TYPE II 3. TYPE III 4. TYPE IV 5. TYPE V

41. SITE - WHERE CLIENTS NEEDS CAN BEST BE MET: (ONE SITE ONLY. ASSUME ALL ARE AVAILABLE)

1. Own Home With Appropriate Support Services
2. Foster Home With Appropriate Support Services
3. Boarding Home With Appropriate Support Services
4. Lodge With Appropriate Support Services
5. Nursing Home
6. Auxiliary Hospital
7. Special Rehabilitation Hospital
8. Psychiatric Care Facility
9. General Acute Hospital
10. Other (specify) ____________________

42. PROGRAMS:*

If client is institutionalized, we will assume programs will be provided (i.e., #41, 5-9). If he can function in a home or lodge site, (i.e., #41, 1-4) which of the following community programs would assist him.

1. None
   Ambulatory Care
2. Day/Night
3. Geriatric Day Care
4. Psychiatric Day/Night Care
5. Diabetic Day Care
6. Rehabilitation Programs
7. Skilled Medical/Nursing Care
8. Surgical Day Care
9. Crisis Centre
10. Physicians Offices
11. Meals-On-Wheels
12. Home Nursing Program
13. Alcoholics Anonymous Program
14. Homemakers And/Or Home Help
15. Other Community Services, Special Equipment, Library, Home Visitor, Etc.
16. Other (specify) ____________________

43. COMMENTS:

____

____

44. INPUT FOR ASSESSMENT FROM:*

1. Client
2. Physician
3. Nurse
4. Social Worker
5. Family
6. Other (specify) ____________________

45. ASSESSOR: ____________________

46. POSITION:

1. Director Of Nursing
2. Head Nurse
3. General Duty Nurse
4. Assessment Officer
5. Other (specify) ____________________

APPENDIX 3

USER'S MANUAL

MEDICINE HAT STUDY
OF
PATIENT CARE CLASSIFICATION
BY
TYPES OF CARE

INVESTIGATOR:
MAVIS E. KYLE, R.N., B.S.N.
FEBRUARY, 1975.

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INTRODUCTION

This project was undertaken at the request of the Medicine Hat and District Health Services Planning Committee as a method of identifying the requirements for sites and programs to meet the needs of the citizens of that community. A questionnaire was developed in the Summer of 1974 and a pre-test run in September. Registered Nurses and Social Workers acted as assessors, evaluating a total of 542 clients. Input for the assessment came from nurses, physicians, other health professionals, clients and families.

Various methods of statistical analysis have been undertaken to identify the degree of reliability and validity of the content of the questionnaires. The importance of each assessment item was defined in relation to the classification categories. The questionnaire has been revised, new pertinent items were added and other items which were not required were deleted. It is now ready for the 1975 test.

Orientation of the assessors was done on a verbal basis for the pre-test, however, in an effort to increase the reliability of the assessment and classification, this manual has been prepared for use during the 1975 test.

GOAL OF HEALTH AND SOCIAL PROBLEMS

As stated in the Federal Working Party Paper On Patient Care Classification, the ideal goal is:

> ...to have the *client* or the *patient* in the *right place* with the appropriate service at the *right time.* In order to achieve this ideal the program should have the capacity to:
>
> (a) *identify the need* of the individual;
>
> (b) *identify the time when the service* will have optimal benefit: and

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(c) *identify the place and the means* through which the needs would be met by the appropriate service. Services should be comprehensive in scope, aimed at *providing continuity* and a reasonably high quality of care. To be efficient and effective, services need to be *integrated and accessible* to the person at the time of need. It should be a dynamic system responding to changes of need from time to time and adaptable to the needs of particular communities, individuals and events.[1]

PATIENT CARE CLASSIFICATION SYSTEM

Patient Care Classification has been identified as one method of working toward the stated goal. In "Types Of Care" Classification, the thrust is in dealing with clients who have manifest needs, a defined or undefined morbidity which requires direct action, as well as a requirement for care based on identified needs. The assessment component of the Classification is comprised of a set of items which are patient oriented, multidimensional in content, objectively stated, and precisely defined. The classification component is based on the criteria described in the Federal Working Party Report. The definitions of Types Of Care have been used verbatum and definitions of sites and programs have been modified to reflect the Alberta scene.

The aim underlying studies of this kind is to provide health care professionals with necessary information on which to make judgements about the significance of the client's status. The study does not explain why the client functions in the way he does. Often the explanation is revealed by a group of assessment items. For example, if the client has total impairment of speech and no verbal communication, it is not surprising to find a chronic condition as a result of a C.V.A. As well, the Classification System is not designed to provide all the information required for all decisions regarding the care of an individual. Rather, it is a core of information which may have to be augmented depending on the purpose of the study.

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[1] The Report Of The Working Party On Patient Care Classification To The Advisory Committee On Hospital Insurance And Diagnostic Services. Department Of National Health and Welfare, Ottawa: 1973.

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PATIENT CARE CLASSIFICATION SYSTEM CONT'D.

To summarize, the Classification System is an information gathering activity using a tool which organizes selected information about the clients and allows for systematic processing of the data. The same information base will be available for each client, regardless of who acts as assessor. An essential point is that the items are precisely defined so that the Classification will be based on an accurate assessment of the functional status of the client.

Only when the degree of reliability and validity of the questionnaire can be determined, that is, when there is consistency, stability and repeatability, as well as if the questionnaire actually measures what it seeks to measure, can the data be accepted as measuring the needs of the clients and properly classifying them into types, sites and programs.

COMPONENTS OF THE CLASSIFICATION SYSTEM

The questionnaire is divided into six sections:

A. IDENTIFICATION
B. MEDICAL STATUS
C. PHYSICAL FUNCTIONING
D. PSYCHO-SOCIAL FUNCTIONING
E. SERVICE REQUIREMENTS
F. CLASSIFICATION BY TYPES OF CARE, SITES AND PROGRAMS

The first five sections contain assessment items which provide the information necessary to complete the sixth section, which is the classification component. The majority of assessment items are scaled to discriminate amont clients according to their degree of dependency, from none or minimum, to high dependency. The classification section requires knowledge about the five assessment sections as well as an awareness of the definitions of Types Of Care and related Patient Characteristics which are incorporated in this Manual.

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COMPONENTS OF THE CLASSIFICATION SYSTEM CONT'D.

The questionnaire has been developed utilizing input from many previous research projects. Of particular note is the work of Densen with a group of researchers from four American Universities.[1] Their work in identifying and defining assessment items has been valuable in preparing for this study. Many of their definitions have been used verbatum in this User's Manual. Proper acknowledgement will be provided in the final report.

METHOD OF DOING THE CLASSIFICATION

1. The Assessor should read the User's Manual and refer to it while going through the questionnaires so that the meaning of each item, Type Of Care definitions and related patient characteristics are clearly understood.

2. Every item is to be completed, except where designated. The items which are "starred" (*) may require more than one response.

3. The concept of "Types Of Care" is based on an interdisciplinary approach to Classification. Therefore, it is recommended that physicians, nurses, and other health professionals be involved in the project. As well, the client and/or his family may have valuable input. Please involve as many relevant sources as possible in completing the questionnaire.

4. Please circle the small numerals designating the correct response to each item. For those items requiring a written response (we have tried to keep them to a minimum) please print if you think there would be a problem in reading your written script.

5. All clients in the General Hospital (with the exception of pediatric and obstetrical patients), Auxiliary Hospital, two Nursing Homes and those clients awaiting placement in the Nursing Homes should be assessed on the designated day for the study. All admissions to the General Hospital for one week after the study day will be assessed in order to get an indication if any of these individuals could receive care on an ambulatory basis.

6. If there are any problems of interpretation, please refer them to Mrs. K. Lawrence who is acting as coordinator of this project.

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[1] Reported by Ellen Jones in Patient Classification For Long-Term Care: User's Manual. Dept. Of Health Education And Welfare, Health Resources Administration, Bureau of Health Research and Evaluation. Washington, D.C.: December, 1973.

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SECTION "A" IDENTIFICATION

The identification items fix the assessment procedures in time and place. Items specific to the client are important in the management of his care.

1. Name Of Client:

The client's name will be used to identify the individual only during the gathering of information. The researcher will then assign each client a number, unique to that client for the study, with the following purposes:

1. protecting the privacy of the individual; and
2. distinguishing each questionnaire or computer record from another, so as to prevent possible error.

2. Location:

A. This item refers to the place in which the client is located on the day of the Patient Classification Study.

Home means owned or rented apartment or house, multiple or single dwelling.

Other - may include rented rooms with or without board in a hotel, YMCA/YWCA etc. If cooking facilities are available in the room it would be considered a *Home*.

B. If the client is in an institution, please note their room number. If the client is at home, proceed to Item #3.

C. If the client is in the General Hospital, please note which type of service he/she is on. Gynecology patients should be classified under "surgery".

3. Psycho-Social Support In The Community:

This item is an index of the psycho-social support available to the client and is aimed at determining who supplies the support. It does not refer to financial support.

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SECTION "A" IDENTIFICATION CONT'D.

4. Client Is Currently An Inpatient:

A. If the client is not institutionalized, circle number 2 and proceed to Item #5.

B. The date of admission provides information regarding the length of stay of the client in the institution *up to the time of the study*.

C. *Admitted from* gives an indication of the proportion of clients moving from home to institution or between institutions in the health care system.

5. Client Is Awaiting Placement In An Alternate Facility:

This item does not refer to clients awaiting placement in the General Hospital.

A. If the client is not awaiting alternate placement, circle number 2 and proceed to Item #6.

B. *Date Of Request For Service* refers to the day, month and year that the 290 form was submitted for client placement in the nursing home or auxiliary hospital or when the request was made for placement in a lodge.

C. *Placement Requested* means the decision made by physician, client and/or family regarding the appropriate location for placement.

6. Year Of Birth:

The calendar year in which the client was born.

7. Sex:

This item is the biological designation of the client as male or female.

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SECTION "A" IDENTIFICATION CONT'D.

8. Resident Of:

This item refers to either:

(a) the province which issued the hospitalization coverage; or

(b) other residency, e.g., United States of America.

It does not refer to eligibility for the Nursing Home Plan.

9. Marital Status:

This item indicates the status of the client relative to the civil rite or legal status or marriage. If living common-law, or any other category not covered above, denote by circling #5 for "other".

10. Dependency Of Client On Supervision:

This item relates to the amount of general supervision required to enable the client to function physically, psychologically and socially.

CATEGORIES

1. *None* - the client is totally independent. No supervision is required.
2. *Minimal* - supervision can be provided by a non health care person, e.g., housekeeper, family member, senior citizen's lodge manager.
3. *Moderate* - the client requires supervision of care by a professional nurse on a part-time basis in a nursing home or on a two or more visits per week basis by a home visiting nurse.
4. *High* - the client requires 24 hours per day supervision by professional nurses, e.g., in an acute care hospital, auxiliary hospital or at home with continuous professional nursing care.

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SECTION "A" IDENTIFICATION CONT'D.

11. Deterrents To Placement Based On Needs:

This item refers to reasons why the client is assessed for a specific placement, but is receiving care in an alternate site.

CATEGORIES

1. *None* - no deterrents are identified.
2. *No Bed In Appropriate Facility* - the client is awaiting placement. When a bed is available he will be transferred.
3. *Financial* - the client is unwilling or unable to assume the financial burden of costs in a location where his needs can best be met.
4. *No Home To Go To* - the client's home is no longer available due to liquidation of holdings, etc.
5. *Family Unable Or Unwilling To Care For Client* - because of space limitation, working arrangements, age, and/or condition of spouse or family member, or any other family reason, the client is unable to move to a home environment.
6. *Client And/Or Family Reject Proposed Placement* - the reasons may include distance to travel, social attitudes, fear of regression of condition, etc.

SECTION "B" MEDICAL STATUS

This section attempts to identify factors which are related to the *medical* status profile of the client, as apart from the *functional* status or *socio-demographic* status.

12. Client's Medicine Hat Physician:

This information has been requested by the Health Care Planner to provide information for his purposes.

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SECTION "B" MEDICAL STATUS CONT'D.

13. Medical Diagnosis:

A. *Client has an acute condition* means that the client is currently exhibiting symptoms of disease in the acute phase. Diagnosis may or may not have been established.

CATEGORIES

1. *None* - no acute condition is evidenced.
2. *Unknown* - for investigation and examination.
3. *Primary Diagnosis.*
4. *Secondary Diagnosis.*

B. *Client has a chronic condition.* The defined conditions are selected disorders and disabilities that, if present, decrease the client's chance of improvement and recovery, and increase his chance of regression and death. These defined conditions were chosen on the basis of experience and research carried out over many years. A condition is considered present if the medical diagnosis is consistent with the defined category. The conditions are concerned with current status, therefore, past history of these conditions, with the exception of malignancy in the past 10 years, is applicable only if there is a current manifestation of that condition. Any malignancy in the past 10 year period should be included. If the medical diagnosis does not fall within the list of condition categories, please enter the diagnosis under "other". More than one response may be applicable.

CATEGORIES

1. *None* - no chronic conditions are evidenced.
2. *Alcoholism* - the medical diagnosis is alcoholic addiction, habitual excessive drinking or other forms of medically diagnosed alcoholism.
3. *Anemia* - a medical diagnosis of anemia of one of the following types:
    - aplastic,
    - B-12 deficiency (pernicious) anemia or
    - folic acid deficiency anemia

   It excludes iron deficiency anemia.

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SECTION "B" MEDICAL STATUS CONT'D.

13. Medical Diagnosis:

B. *Client has a chronic condition. Cont'd.*

CATEGORIES

4. *Angina and/or Myocardial Infarction.* This item records the presence of angina and/or myocardial infarction as defined in standard medical texts.

5. *Arthritis.* This item includes osteoarthritis and rheumatoid arthritis.

6. *Cardiac Arrhythmias.* This item records irregularities of heartbeat diagnosed as atrial fibrillation, left or right bundle branch block or complete heart block.

7. *Congestive Heart Failure.* This item records the medical diagnosis of congestive heart failure, including right ventricular failure and left ventricular failure.

8. *Diabetes Mellitus.* This item records the medical diagnosis of diabetes mellitus.

9. *Drug Abuse.* Drug abuse is the addiction to, or dependence on anaesthetic or analgesic drugs, barbituates, hypnotics, sedatives tranquillizers, psychostimulants, hallucinogenics, or other habit forming drugs.

10. *Hypertension.* This item records a medical diagnosis of essential hypertension, including malignant hypertension.

11. *Malignancy.* This item records any medical diagnosis of malignancy, primary or metastatic, within 10 years prior to the date of assessment.

12. *Mental Illness.* This item includes a medical diagnosis of psychosis, anxiety, depression or other psychiatric illness. Excluded from this item are the following:

    - Alcoholism without mention of psychosis (see #13-B-2)
    - Chronic brain syndrome (see #13-B-13)
    - Drug abuse (see #13-B-9)
    - Mental retardation (see #13-B-13)

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SECTION "B" MEDICAL STATUS CONT'D.

13. Medical Diagnosis:

B. *Client has a chronic condition. Cont'd.*

CATEGORIES

13. *Neurological Disorders.* This item includes diseases of the central nervous system and peripheral nerves. Some more common examples of diagnosis in this category are:

    - chronic brain syndrome
    - congenital defects, e.g., cerebral palsy, etc.
    - demyelinating and dysmyelenating e.g., multiple sclerosis, encephalomyelitis
    - epilepsy
    - extrapyromidal, e.g., Parkinsonism
    - mental retardation
    - peripheral neuropathies

    This category excludes cerebrovascular disease e.g., hemorrhage, embolism or thrombosis (see #13-B-15).

14. *Respiratory Disease, Chronic.* This item refers to chronic obstructive pulmonary disease, bronchitis, emphysema and/or asthma.

15. *Cerebrovascular Accident, Chronic.* This item refers to chronic conditions which are a result of a C.V.A. (hemorrhage, embolism, thrombosis).

16. *Fractures, Chronic.* This item refers to chronic conditions resulting from any type of bone fracture. The most common example is a hip fracture but others are applicable.

17. *Other (specify).* Any chronic condition associated with a medical diagnosis that does not fall within the above categories should be noted here.

14. Clinical Condition Is Stabilized:

This item refers to the current stage of illness. The condition is stable if no fluctuation or change is expected in the near future.

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SECTION "B" MEDICAL STATUS CONT'D.

15. Severity Of Impairment:

This item refers to the current severity of a client's overall degree of impairment and a subjective prediction of the client's level of impairment in three months and also in one year. It is an attempt to identify prognosis e.g., if the client has malignancy, is it considered terminal now and what is the outlook for the future?

16. Major Health Risk Factors:

This item attempts to identify factors which may be imposed which contribute to ill health. A portion of them have been identified by Marc Lalonde in A New Perspective On The Health Of Canadians.

CATEGORIES

1. *None.*
2. *Obesity.* Observation of height and weight permits quantification of this condition.
3. *Malnourished.* Client, because of poor eating habits, has a risk to his health.
4. *Heavy Cigarette Smoker.* Describes the clients current status in respect to cigarettes. It does not include cigar or pipe smoking. A client is considered a "heavy smoker" if he/she smokes 25 or more cigarettes per day.
5. *Suicidal.* The client has contemplated or attempted to take his own life.
6. *Lack Of Physical Exercise.* Related to the client's age and physical status. He does not maintain his health through exercise.
7. *Fragile Skin Condition.* The client's skin tends to break down unless carefully attended to.

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SECTION "B" MEDICAL STATUS CONT'D.

17. Potential For Improvement Of Health Through Coordinated Rehabilitation Programs:

This item refers to intensive planned rehabilitation programs, e.g., physiotherapy, occupational therapy, speech therapy, as well as intensive psychiatric or psychological therapy.

CATEGORIES

1. *None.* The client would not benefit from this type of therapy.
2. *Moderate.* The client would obtain some benefit to maintain or elevate his level of functioning.
3. *High.* There is potential for major improvement of the client's health through intensive rehabilitation therapy.

18. Client Requires Reassessment Of Care Program:

This item is an attempt to identify a general time range in which the overall program of care should be discussed and reassessed based on changes in the condition of the client. It does not refer to unexpected crises. Clients needing acute care would obviously fall within the first category, but how often should the care profile of a long-term care client be reviewed?

SECTION "C" PHYSICAL FUNCTIONING

Items in this section are frequently referred to as the basic activities of daily living, since they describe the client's performance of activities that are common to all human beings and that are necessary for basic social existance.

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SECTION "C" PHYSICAL FUNCTIONING CONT'D.

For those clients obtaining *acute type care*, the assessment should describe the actual performance of the client on the day of the study. For assessment of *long-term care* clients, the usual performance of activities within two weeks prior to assessment can be considered current status. "Usual" may be interpreted to mean more often than not.

19. Senses:

A. *Sight.* Sight is the act, faculty or perceiving of objects through the eyes.

CATEGORIES

1. *No Problem.* No problem with sight with or without compensation with glasses/lenses.
2. *Some Problem.* Some problem with sight with or without compensation with glasses/lenses.
3. *Major Problem.* The client is blind.

B. *Hearing.* Hearing is the act, faculty or process of perceiving sound through the ears.

CATEGORIES

1. *No Problem.* No problem with hearing with or without compensation with a hearing aid.
2. *Some Problem.* Some problem with or without compensation with a hearing aid.
3. *Major Problem.* The client is deaf.

C. *Speech.* Speech is the ability to express or communicate opinions, feelings, ideas, etc. by talking. This item relates to the physiological ability to speak.

CATEGORIES

1. *No Problem.* Physiologically able to speak.
2. *Some Problem.* Problem in speaking brought on by a disease process.
3. *Major Problem.* Unable to speak because of physical damage.

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SECTION "C" PHYSICAL FUNCTIONING CONT'D.

20. Grooming:

A. *Bathing*. This item describes the process of washing the body or body parts.

CATEGORIES

1. *No Help*. The client receives no assistance or supervision from another person. He may require equipment, e.g., grab bars, railings, etc. but is independent in their use.

2. *Some Help*. Another person assists the client by activities such as filling the tub with water, helping the client in and out of the tub, assistance with bath, towel drying and supervision. It also refers to assistance with sponge baths.

3. *Total Care*. The client is completely bathed by another person or persons whether in bed, shower or tub.

B. *Dressing*. This item describes the process of putting on, fastening, and taking off all items of clothing, braces, and artificial limbs that are worn daily by the individual; and obtaining and replacing these items from their storage area in the immediate environment. This item includes the ability to put on and takeoff clothing worn in bed.

CATEGORIES

1. *No Help*. The client receives no assistance or supervision from any other person. He may require equipment, e.g., braces, artificial limbs, etc. but is independent in applying and removing them.

2. *Some Help*. Another person helps the client in activities such as obtaining the clothing, fastening buttons and zippers, putting on and off clothes, socks, shoes, putting on and off braces and artificial limbs, providing supervision and teaching the client to dress himself.

3. *Total Care*. The patient is completely dressed by another person.

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SECTION "C" PHYSICAL FUNCTIONING CONT'D.

21. Walking:

This item describes the process of moving about on foot.

CATEGORIES

1. *Without Help.* The client receives no assistance or supervision from another person. He may need a cane or crutches, etc., but requires no assistance in their use.

2. *With Help.* The client needs assistance or supervision of another person on a one-to-one relationship of helper and client. He may also require the use of leg braces, splints, canes, walker etc. in conjunction with human assistance.

3. *Chairfast Or Bedfast.* The client does not usually walk. He may be helped to take a few steps from bed to chair, but this alone does not constitute walking.

22. Goes Outside House/Facility:

This item describes the client's ability to go outside the house or institution.

CATEGORIES

1. *Without Help.* The client goes outside and returns without assistance from another person. He may require the use of devices, e.g., cane, crutches, wheelchair, but is independent in their use.

2. *With Help.* One or more persons help the client when he goes outside. He may also require equipment, and/or devices.

3. *Does Not Go Outside.* The client does not usually go outside the house or facility. Transfer by taxi or ambulance to doctors offices, clinics or hospital are not considered "outside" for purposes of this item.

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SECTION "C" PHYSICAL FUNCTIONING CONT'D.

23. Voluntary Motion Of Limbs:

This item is the loss or partial loss of voluntary motion of any limb, with or without the loss of sensation.

CATEGORIES

1. *No Problem.* Has voluntary control.
2. *Muscular Atrophy Or Weakness.* Because of injury, progressive disease and/or vascular incompetancy the client exhibits difficulty with voluntary motion.
3. *Paralysis.* Regardless of etiology, the client exhibits monoplegia, hemiplegea, paraplegia or quadriplegia.

24. Transferring:

Transferring is the process of moving horizontally, and/or vertically between bed, chair, wheelchair and/or stretcher.

CATEGORIES

1. *Without Help.* The client receives no assistance or supervision from another person. He may require assistance from devices, e.g., grab bars, rollers, but can use them independently.
2. *With Help.* Another person assists the client by guarding, guiding or supervising in the process of transferring, or total assistance when the client does not participate in the process.
3. *Bedfast.* The client is not moved from the bed.

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SECTION "C" PHYSICAL FUNCTIONING CONT'D.

25. Wheeling:

Wheeling is the process of moving about by means of any device equipped with wheels.

CATEGORIES

1. *Does Not Wheel.* Walks - does not require wheeling to be mobile.
2. *Without Help.* The client receives no assistance or supervision from another person. He is able to manipulate and propel his own wheelchair.
3. *Is Wheeled.* The client is transported in a wheelchair but does not propel or guide it. The client may be able to wheel a few feet but this alone does not constitute independent wheeling.

26. Bladder Function:

This item describes the physiologic process of elimination or urine from the bladder.

CATEGORIES

1. *Normal Function.* The client voluntarily empties the bladder.
2. *Normal With Supervision.* The client voluntarily empties the bladder if reminded and assisted by another person.
3. *Retention - Indwelling Catheter.* The problem of retention is compensated for by the use of an indwelling catheter.
4. *Involuntary Loss - No Catheter.* The client has involuntary emptying or loss of urine from his bladder.
5. *Involuntary Loss - Indwelling Catheter Or External Device.* The problem of involuntary loss is compensated for by the use of an indwelling catheter or an external device.

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SECTION "C" PHYSICAL FUNCTIONING CONT'D.

27. Bowel Function:

This item describes the physiologic process of elimination feces from the bowel.

CATEGORIES

1. *Normal Function.* Means the client voluntarily controls the evacuation of feces from his bowel,
2. *Normal.* With laxatives, suppositories, enemas.
3. *Involuntary Loss.* Means the patient is incontinent of feces.
4. *Ostomy - Self Care.* Ostomy is a surgical procedure that establishes an artificial anus by an opening into the colon or the ileum. Self care means that the client completely cares for his ostomy.
5. *Ostomy - Assistance Required.* Another person cares for the client's ostomy; stoma and skin cleansing, dressings, application of appliance, irrigations etc.

28. Uses Toilet Room:

This item refers to the usual process of getting to and from the toilet room for elimination of feces and urine, transferring on and off the toilet, cleansing after elimination, and adjusting clothes.

CATEGORIES

1. *Without Help.* Means the client receives no assistance or supervision from another person. He may require the use of grab rails, etc., but is independent in their use.
2. *With Help.* Another person helps the client in getting to and from the toilet room, adjusting clothes, transferring and cleansing. He may also require special devices in assisting him to and from the toilet room e.g., raised toilet or toilet seat, transfer board, grab rails, etc.
3. *Does Not Use.* Means the client uses another means for elimination than the toilet room, such as urinal, bedpan, or commode.

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SECTION "C" PHYSICAL FUNCTIONING CONT'D.

29. Eating:

This item is the usual process of getting food by means from a receptacle (plate, cup, glass, bottle, etc.) into the body.

CATEGORIES

1. *Without Help.* The client receives no assistance from another person. He may require specially adapted devices, e.g., long handled spoon, wrist brace, suction plate, etc., but is independent in their use.

2. *Some Help.* The client requires assistance from another person in cutting meat, buttering bread, pouring milk on cereal, cream in coffee, etc. He may also require assistance in using specially adapted devices.

3. *Total Help.* Spoon feeding by another person, tube feeding via a gastrogavage tube, or is fed a sterile solution intravenously.

30. Where The Client Presently Eats:

This item refers to the usual environment in which the client is situated while being nourished.

CATEGORIES

1. *Dining Room.* A room where a group of clients or family eat together.

2. *Chair In Bedroom.* The client eats his meals while sitting in a chair in his bedroom.

3. *Bed.* The client is nourished while in his bed either by use of a tray, tube feeding or intravenous.

. . . .21

SECTION "C" PHYSICAL FUNCTIONING CONT'D.

31. Dentition:

This item describes the usual functional ability of the client to masticate his food based on the number and kind of teeth in the jaw.

CATEGORIES

1. *No Problem.* The client may have all his teeth or suitable crowns, bridges, partial or full plates to allow him to eat a normal diet.
2. *Some Problem.* The client may have his own teeth or crowns, bridges, partial or full plates, but demonstrates some degree of difficulty in eating a normal diet.
3. *Major Problem.* The client is unable to eat a normal diet because of poor dentition. This includes a person who has a set of plates, but does not use them.

32. Special Diet:

This item identifies whether or not a medically prescribed diet other than the regular diet provided in the institution or home is required.

CATEGORIES

1. *No.*
2. *Yes.*

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SECTION "D" PSYCHO-SOCIAL FUNCTIONING

This section is related to the ability of the client to perform basic social functions in a manner appropriate to his environment.

33. Communication Of Needs:

A. *Verbal.* This item describes the process of making known to others by verbal means, one's desires and/or requirements for physical, mental and social support.

CATEGORIES

1. *Adequate.* No problem noted.

Inadequate:

2. *Educational.* The lack of education is a major basis for problems with communication.

3. *Physical.* Inability to speak i.e., aphasia.

4. *Cultural.* There is a language barrier, with no one of a similar cultural background in the environment to assist with communications.

5. *Emotional.* Because of psychosis, neurosis, chronic brain syndrome, etc., the client has inadequate communication skills.

B. *Non Verbal.* This item refers to the ability of the client to transmit his needs by pointing or other gestures and/or through written means. He may also communicate through body positioning, facial expression, and behaviour to provide cues to his needs.

CATEGORIES

1. *Aequate.*

2. *Inadequate.*

. . . . 23

SECTION "D" PSYCHO-SOCIAL FUNCTIONING CONT'D.

34. Behaviour:

This item characterizes the usual manner of conducting oneself within one's environment. The assessment is based on observation of the client's actions.

CATEGORIES

1. *Appropriate*. Means the client's behaviour pattern is suitable or fitting to the environment.
2. *Comatosed, Semi-Comatosed, Or Under General Anaesthetic*. These conditions, defined in medical texts, are brought about by disease, injury or medical treatment.
3. *Inappropriate, Wandering, Or Passive*. Means behaviour unsuitable to the environment.
4. *Inappropriate, Abusive, Aggressive, Disruptive, Agitated*. Means behaviour that is manifested in acts detrimental to life, comfort, and/or property of himself and/or others.
5. *Inappropriate, Other*. Specify.

35. Memory And Orientation:

This item characterizes the usual awareness of an individual within his environment in relation to time, place, and person.

CATEGORIES

1. *Normal*.
2. *Periods Of Forgetfulness, Confusion, Disorientation*.
3. *No Recall*.

36. Ability To Be Realistic In Judgement:

The usual mental activity of the client to meet the unavoidable demands of his environment.

CATEGORIES

1. *Normal*.
2. *Limited Ability*.
3. *Unable To Make Any Judgement*.

SECTION "D" PSYCHO-SOCIAL FUNCTIONING CONT'D.

37. Mood:

Mood refers to the client's usual state of mind or feeling; humor or temper.

A. *Depressed.* Gloomy, dejected, sad.

B. *Anxious.* Apprehensive, worried, rattled, nervous, high strung.

C. *Uncooperative.* Not willing to work toward a goal.

CATEGORIES

1. *No Problem.*
2. *Moderate Problem.*
3. *Extreme Problem.*

38. Initiative In Participating In Social Activities:

This item refers to the ability of the client to plan and take part in social activities without being urged.

CATEGORIES

1. *High Initiative.* Able to plan and take part in social activities independently.
2. *Low Initiative.* Will take part in social activities if they are planned for him.
3. *No Initiative.* Must be urged to take part in social activities which are planned for him.

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SECTION "E" SUBJECTIVE EVALUATION OF SERVICE REQUIREMENTS

39. Therapy And/Or Treatments:

Based on the assessment of the functional ability and the medical status of the client, this section is provided to allow the professional health care person acting as assessor, with input from others, to subjectively define the service requirements that he or she thinks that the client could benefit from. These service requirements may already be components of the care he is receiving and/or they may be requirements that, if provided, would assist the client to maintain or increase his functional ability to its optimal level. Assume that all the services are available. If services are required that are not listed, please note them under "other".

CATEGORIES

As listed on the questionnaire.

SECTION "F" CLASSIFICATION OF TYPE OF CARE, SITES, PROGRAMS

40. Type Of Care Required:

The characteristics of the client's condition determine the Type Of Care required. Therefore, based on the assessment of client needs, along with the Patient Characteristics as noted with the Definition of Types of Care, a decision can be made as to the appropriate Type. (Definitions on pages 26 and 27)

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DEFINITIONS OF TYPES OF CARE REQUIRED

TYPE OF CARE	DEFINITION	PATIENT CHARACTERISTICS
TYPE I CARE	*Type I Care* is that which is required by a person who is ambulant and/or independently mobile, who has a decreased physical and/or mental faculties, and who requires primarily supervision and/or assistance with activities of daily living and provision for psycho-social needs through social and recreational services. The period of time in which care is required is indeterminate and related to the individual condition.	1. The medical condition is known to be stabilised or under clinical control. 2. The person has: (a) physical and/or mental frailty or (b) congenital handicap or (c) disability due to previous illness or injury. 3. The person should be independently ambulatory (with or without mechanical aids) or independently mobile in a wheelchair. 4. The person is limited mentally or physically in his ability to care properly for himself independently and as a consequence has major social needs. 5. The care required is primarily supervision and assistance with activities of daily living. 6. The treatment, if any, is standardized and includes only maintenance medication and preventive services.
TYPE II CARE	*Type II Care* is required by the relatively stabilized long stay chronically ill or functionally disabled person who, having reached the apparent limit of his recovery, has relatively little need for the diagnostic and therapeutic services of a hospital but who does require care on a continuing 24-hour basis with medical and professional nursing supervision and provision for psycho-social needs. The duration of care is unpredictable but usually consists of a matter of months or years.	1. Diagnosis has been established. 2. The patient has a chronic illness which is not in an acute phase or has a relatively stabilised functional disability. 3. As demonstrated by previous assessment and response to treatment there is little or no rehabilitation potential. 4. The disease process is relatively stabilized. 5. There is relatively little need for diagnostic and therapeutic services. 6. The individual's need is primarily for care on a continuing 24-hour basis with professional nursing supervision and access to physical medicine services. 7. A prolonged period of care is anticipated, i.e., the patient's condition is expected to remain significantly unchanged in the near future.
TYPE III CARE	*Type III Care* is that required by a person who is deemed to be chronically ill, whose acute phase of illness has passed, whose vital processes may or may not be stable, whose potential for rehabilitation may be limited, and who requires a range of therapeutic services coupled with social and recreation services. The period of time in which care is required is unpredictable but usually lengthy, and a matter of months or years.	To be classified as requiring Type III Care the following conditions must pertain: 1. The diagnosis is established. 2. The patient has a chronic illness. 3. The acute phase of the illness has passed or is subsiding. AND one or more of the following must be exhibited: 4. The patient has rehabilitation potential which can best be realised in a slow paced program. 5. The disease process requires medical management to achieve clinical control. 6. Evidence of significant change presently occurring in the patient's condition, e.g., improvement, relapse, deterioration or progression of disease. 7. A need for nursing care with professional nursing supervision on a continuing 24-hour basis.

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TYPE OF CARE	DEFINITION	PATIENT CHARACTERISTICS
TYPE IV CARE	*Type IV Care* is that required by persons with relatively stable disability such as congenital defect, post-traumatic deficits or the disabling sequelae of disease, which is unlikely to be resolved by convalescence or a normal healing process, who requires a specialized rehabilitation program to restore or improve functional ability. Adaptation to this impairment is an important part of the rehabilitation process. Emotional problems may be present and may require psychiatric treatment along with physical restoration. The intensity and duration of this Type Of Care is dependent on the nature of the disability and the patient's progress, but maximum benefits usually can be expected within a period of several months.	1. The diagnosis has been established. 2. The acute phase of illness is past or is subsiding. 3. The patient has a demonstrated functional impediment or impairment. 4. The need is related to a functional deficit, requiring primarily specialized assessment, treatment, adaptation and training.
TYPE V CARE	*Type V Care* is that required by a person: (a) Who presents a need for investigation, diagnosis or treatment for a known, an unknown or potentially serious condition; or (b) Who is critically, acutely or seriously ill (regardless of diagnosis) and whose vital processes may be in a precarious or unstable state; or (c) Who is in the immediate recovery phase or who is convalescing following an accident, illness or injury and who requires a planned and controlled therapeutic and educational program of comparatively short duration.	To be classified as *Type V Care* one of the following conditions are essential: 1. The patient has an acute illness or injury. 2. The patient requires investigation and examination for, an unknown or potentially serious condition. 3. The patient requires life-saving measures.

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SECTION "F" CLASSIFICATION OF TYPE OF CARE, SITES, PROGRAM, CONT'D.

41. Site Where Clients Needs Can Best Be Met:

When the decision has been made as to what Type Of Care the client requires, the next decision is the delivery site where the identified needs can be met. Within each Type there may be either an institutional site or the clients needs may be met in a home environment with appropriate support services. Based on the functional and medical status as well as the social situation of the client, please make a decision as to the most appropriate site for care. Assume that all sites that are listed are available. If sites are required that are not listed, please note them under "other".

CATEGORIES

As listed on questionnaire.

42. Programs:

If the appropriate site for care is an institution, then we will assume that programs to meet the clients needs will be available. However, if the client is in the home environment it is important to identify health and social programs which would be appropriate to meet his needs. Therefore, *ignore this item if the above site for care is an institution,* Otherwise, circle the number of as many programs as may be necessary. Assume that all programs are available. If programs are required that are not listed, please enter them under "other".

CATEGORIES

As listed on questionnaire.

43. Comments:

This item is open ended to allow the assessor to make any pertinent comments such as information we have omitted which is valuable in the assessment of the client's needs, comments on the format of the questionnaire, items that were not properly defined, etc., etc. Input from this item on the pre-test was very valuable.

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SECTION "F" CLASSIFICATION OF TYPE OF CARE, SITES, PROGRAMS CONT'D.

44. Input For Assessment From:

Because Patient Care Classification is interdisciplinary and we recognize the importance of consumer input, this item is intended to identify the sources of information used in the assessment of client's needs as well as in the decision regarding the placement and programs required. This item does not include the major assessor.

45. Assessor:

This information will only be utilized while the study is in progress in order to refer to the individual for clarification or additional information if required.

46. Position:

This item provides information as to the usual position held by the Assessor.

CONCLUSION:

Thank you for your hard work! We will keep you informed about the results. An interim report will be prepared by March 31st, 1975, and the final report will be available after June 15th, 1975.

APPENDIX 4

CODE BOOK

February 13, 1975

MEDICINE HAT STUDY

Note: Missing information on any item is punched zero or blank

CARD	COLUMN	QUESTION	FIELD TYPE	VALUES
1	1		Card Number	1
	2-4		Client Number	001 etc. given in box
	5	2.A	Location	1-7 as circled
	6-8	2.B	Room Number	001 etc. as written in
	9	2.C	Service	1-4 as circled
	10	3.A	Support	1-4 as circled
	11-16	3.B.1 to 3.B.6	Source*	0, 1 No, Yes for each
	17	4.A	Inpatient	1-2 as circled
	18-23	4.B	Date	DDMMYY
	24	4.C	From	1-8 as circled
	25	5.A	Waiting	1-2 as circled
	26-31	5.B	Date	DDMMYY
	32	5.C	Requested	1-5 as circled
	33-35	6	Birth	CYY last 3 digits of Yr.
	36	7	Sex	1-2 as circled
	37	8	Resident	1-3 as circled
	38	9	Marital	1-5 as circled
	39	10	Depend	1-4 as circled
	40-45	11.1 to 11.6	Deterrents*	0, 1 No, Yes for each
	46-47	12	Physician	01, etc. as written in
	48	13.A.1	Acute-None	0,1 No, Yes
	49	13.A.2	Acute-Unknown	0,1 No, Yes
	50-53	13.A.3	Prim. Diag.	0001 etc. as written in
	54-57	13.A.4	Sec. Diag.	0001 etc. as written in
	58-74	13.B.1 to 13.B.17	CHR. Cond.*	0, 1 No, Yes for each
	75	14	Stable	1-2 as circled
	76-78	15.A to 15.C	Severity	1-4 as circled for each
	79-80	16.1 to 16.2	Risk (1,2)*	0, 1 no, Yes for each
2	1		Card Number	2
	2-4		Case Number	001 etc. given in box
	5-10	16.3 to 16.8	Risk (cont'd)*	0, 1 No, Yes for each
	11	17	Potential	1-3 as circled
	12	18	Reassess	1-4 as circled
	13-22	19.A to 25	Physical	1-3 as circled
	23-24	26,27	Bowel-Bladder	1-5 as circled

continued....................

CARD	COLUMN	QUESTION	FIELD TYPE	VALUES
	25-28	28-31	Physical (cont'd)	1-3 as circled
	29	32	Diet	1-2 as circled
	30	33.A.1	Verbal Comm.A.	0, 1 No, Yes
	31-35	33.A.2 to 33.A.6	V.C. INAD*	0, 1 No, Yes for each
	36	33.B	NON VERB.	1-2 as circled
	37	34	Behavior	1-5 as circled
	38-43	35-38	Psycho-Soc.	1-3 as circled
	44-56	39	Therapy, Treatment*	0, 1 No, Yes for each
	57	40	Type	1 - 5
	58	41	Site	1-9, do not code #10
	59-74	42.1 to 42.15	Programs*	0, 1 No, Yes for each do not code #16
	75-79	44.1 to 44.6	Input*	0, 1 No, Yes for each
	80	46	Position	1 - 5